

WAR PRODUCTION INVENTORY NUMBER

APRIL 1942

Coal Age

McGraw-Hill Publishing Company, Inc. • THIRTY-FIVE CENTS PER COPY

KEYING MINE PRIORITIES

Supplies for Coal's War Production

NEW UNDERGROUND SHOP

Signifies Importance of Maintenance

MODERN CONVEYOR MINING

Now Retrieves Coal Left at Exeter

EFFICIENCY AND SAFETY

Mark Old Ben No. 8 Modernization

COMMUNICATION PROBLEM

Solved at Frances Mine by "Radio"

SHUTTLE CARS & CONVEYORS

Step-Up Output of Truck Mine

PROGRAM AND MEETINGS

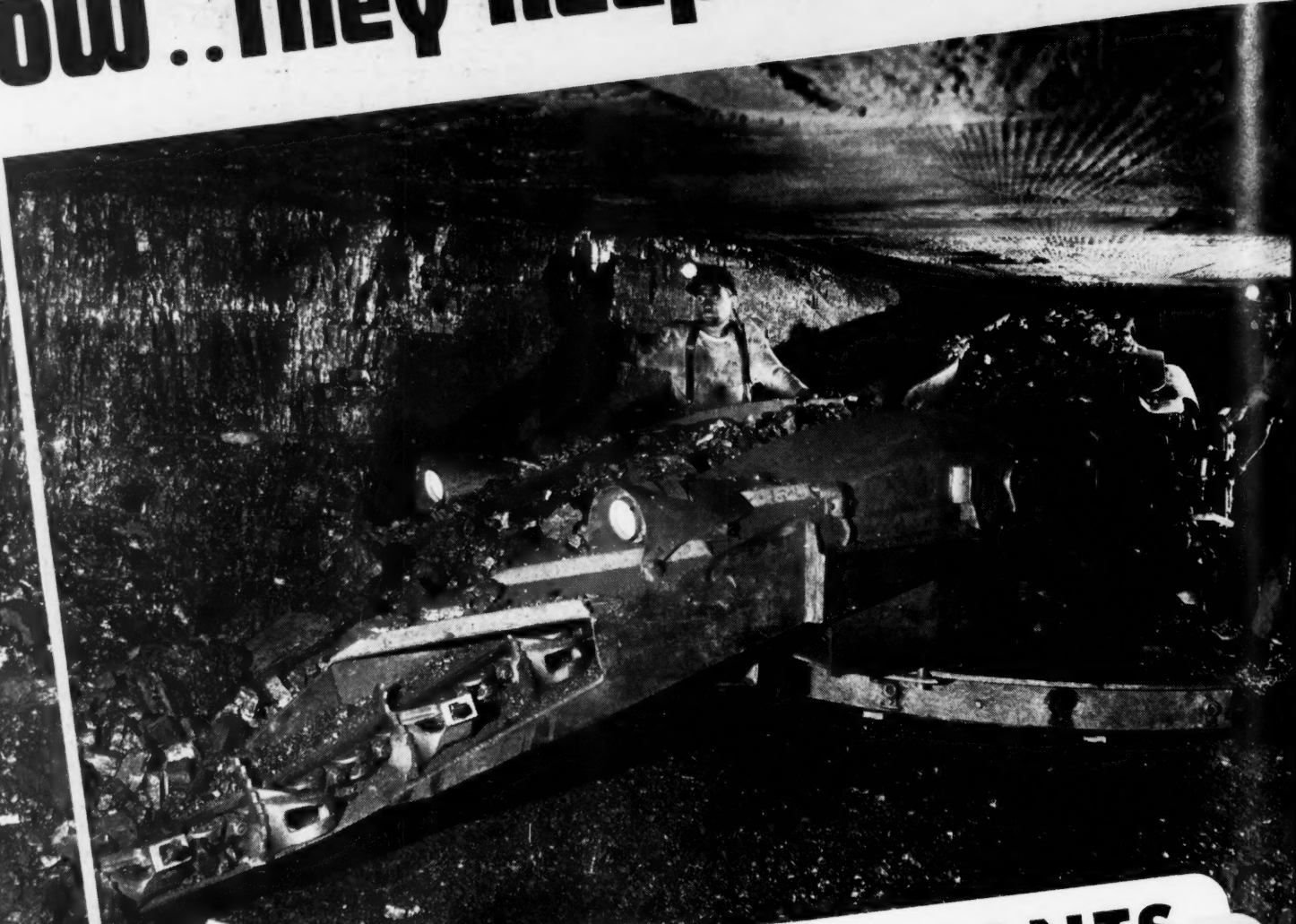
Summon Coal Industry to Cincinnati

Complete Table of Contents, P. 5



The Business End of the Dragline at Fidelity Mine

now...They Keep 'em Loading



SUN MINE LUBRICANTS

Eliminated 96% of "Time Out" for Clutch Cleaning

"Clutch trouble, due to faulty lubricants, caused shutdowns of mining machines every two weeks for cleanouts. Careful study of operating conditions and a switch to Sun Mine Lubricants resulted in elimination of trouble, clutches requiring cleaning only once a year and cost of lubrication cut 25%."

That's a typical report of a Sun Oil Engineer — one of those Doctors of Industry who are constantly working shoulder to shoulder with mine superintendents to help boost production from seam to chute. Day in . . . day out, Sun Engineering service and Sun Mine

Lubricants are working as a team to reduce power drag . . . step up efficiency . . . and increase production to provide fuel for America's greatest production job.

Whatever your production problem, Sun's Doctors of Industry always stand ready . . . willing and able to help you in your mine. Call them in today. Let them prove to you the production value of applying the right petroleum product in the right place. For proof of what skilled engineering service can accomplish, write SUN OIL COMPANY, Phila.



SUN MINE LUBRICANTS

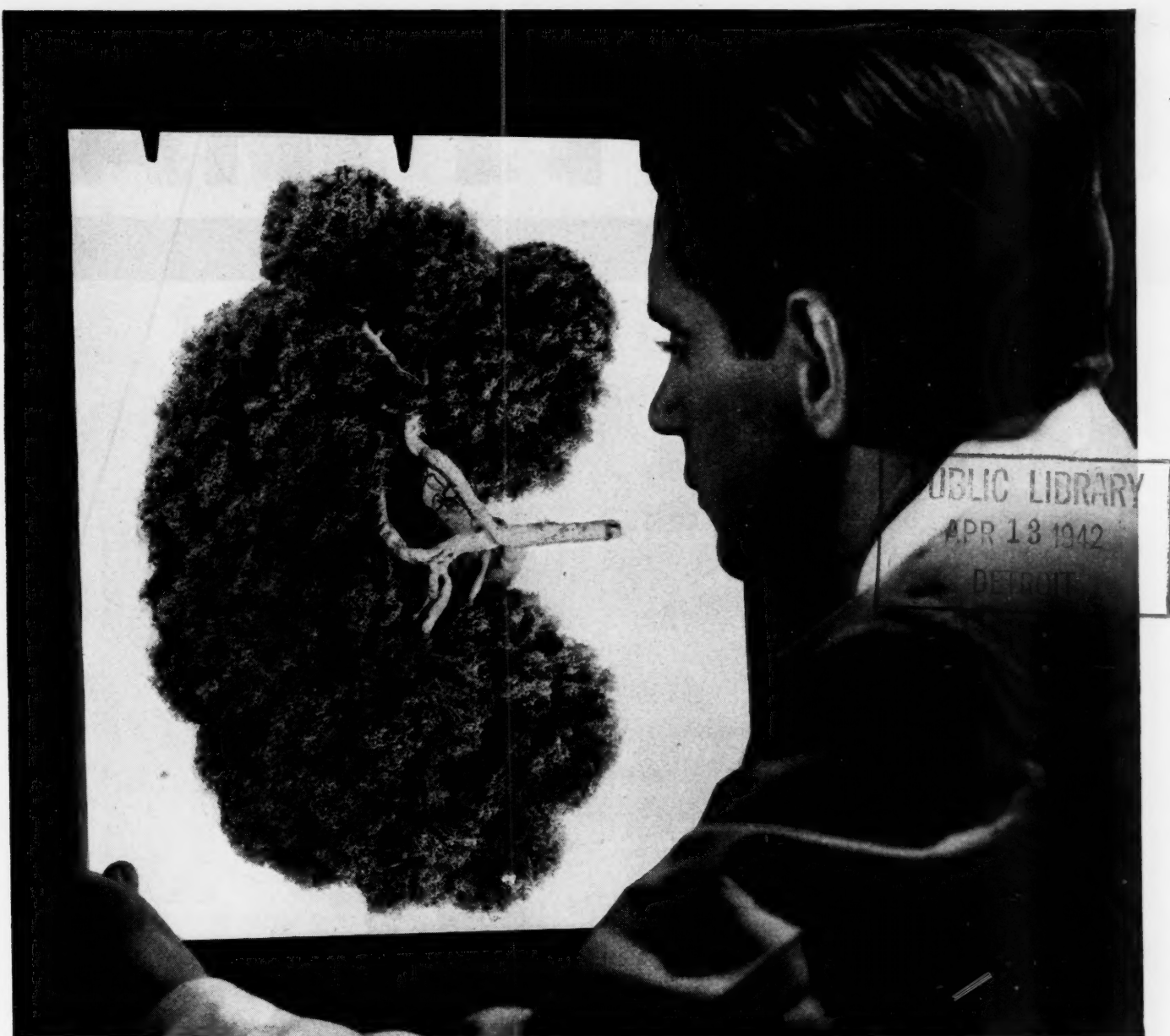
include:

SUN Pressure Grease
SUN Compressor Oils
SUN Journal Oils
SUN Mine Car Lubricants
SUN Ball & Roller Bearing Greases

SUNOCO

SUN PETROLEUM PRODUCTS

HELPING INDUSTRY HELP AMERICA



Statue in rubber of somebody's kidney

A typical example of Goodrich development in rubber

THE "transportation system" of the human kidney has always been hard to study. The only way for medical men to do it was to take a cross-section, but that wasn't enough because it didn't show the blood vessels satisfactorily, which are the important things to understand.

Medical research workers, who knew rubber could be used in hundreds of different ways, wondered if these blood vessels could be reproduced in rubber. Here's how they did it with the help of B. F. Goodrich engineers.

Latex, the milky sap of the rubber

tree, flows easily. Why not force it into the tracts of a kidney, fill them, then dissolve away the tissue? You'd have the entire blood system reproduced in rubber in perfect detail.

But latex was too thick to enter some of the tiny passages; it also clots easily and in slender tendrils might be etched by the acid used to dissolve the tissue. Goodrich developed a material like latex but from synthetic rubber instead of natural liquid from the tree. The synthetic latex is impervious to acid; it could be made in a very thin compound that wouldn't clot.

Now any medical school can have a perfect model of the kidney's blood system, so its mysteries are all revealed, research in kidney diseases is fostered—all because years of research have given B. F. Goodrich engineers a broad fund of knowledge in rubber that is brought to bear on all rubber products. Even during this period of rubber restrictions this research will go on and future improvements will be planned. *The B. F. Goodrich Co., Industrial Products Div., Akron, O.*

B. F. Goodrich

FIRST IN RUBBER

QUALITY HAS



HULBURT

ALWAYS PAID

BUT

NOW

IT PAYS MORE

Proper maintenance and lubrication of coal mine equipment is more important today than ever before. Hulburt Quality Grease will help to lengthen the life of equipment that may have to serve for the duration. Hulburt Quality Grease is the only grease made exclusively for coal mine equipment. Call in a Hulburt Lubrication Engineer for your down-in-the-mine survey. He's a specialist in lengthening the life of coal mine equipment.

HULBURT OIL & GREASE COMPANY

Specialists in Coal Mine Lubrication

PHILADELPHIA . . . PENNSYLVANIA

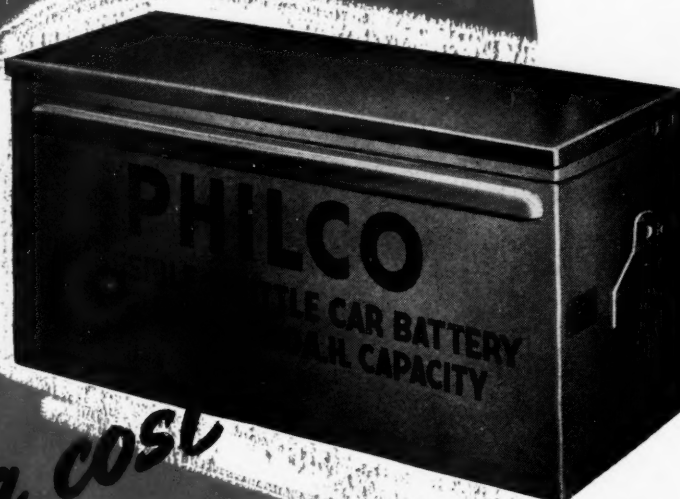


QUALITY GREASE

*You can
haul 10%
more coal
at no extra cost
with*

PHILCO BATTERIES

in your JOY Shuttle Cars



**A Philco Engineer
will be glad to
discuss your haul-
age problem with
you.**

PHILCO, Storage Battery Division ★ Trenton, New Jersey

Operators see their problems in a new light in view of the restrictions that the war has brought in its train, and the meeting of the American Mining Congress at Cincinnati will help them to orient themselves to meet these new conditions. Everything has a different look in the lurid light of Pearl Harbor. No one can afford, therefore, not to be present at the coming sessions. . . . **The Keynote of the Convention** is struck by J. Noble Snider on p. 74, and Wilbur A. Nelson, Administrator of the Mining Branch, War Production Board, sketches on p. 62 how both operator and manufacturer should keep Washington informed as to their needs, so that help may be planned to keep steadily turning the wheels of this industry, for, without its effective aid, the war cannot be waged. . . . **In the anthracite region**, coal that a few years back was too thin and too flat to mine is now the mainstay of a few large operations, of which Exeter colliery is an outstanding example (see p. 71).

(CONTINUED ON PAGE 7)



COAL AGE (with which is consolidated "The Colliery Engineer" and "Mines and Minerals") is published monthly on the 1st. Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 330 West 42d Street, New York, N. Y.

Subscription rates: United States, Canada, Mexico, Central and South America, \$3 for one year, \$4 for two years, \$5 for three years. Great Britain and British Possessions, 30 shillings for one year, 60 shillings for three years. All other countries \$5 for one year, \$10 for three years. Single copies, 35 cents each. Entered as second-class matter Oct. 14, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in the U. S. A. Cable Address: "McGraw-Hill N. Y." Member A.B.P. Member A.B.C.

Coal Age

Volume 47

Volume 4

Contents

Operators and Manufacturers Must List Their Year's Requirements.	62
By WILBUR A. NELSON	
Old Ben No. 8 Blazes New Trails to Effective Safe Operation.	66
By IVAN A. GIVEN	
Modern Machinery Enables Exeter Colliery to Mine 30-In. Seams.	71
By R. DAWSON HALL	
American Mining Congress to Hold Clinic on War-Hampered Industry	74
By J. NOBLE SNIDER	
What Operating Men Will Discuss at the Cincinnati Mining Congress	75
Moore Branch, Though a Truck Mine, Has Shuttles and Conveyor.	76
By J. H. EDWARDS	
Riding Loading Machines to Shop on Special Trucks Cuts Costs.	79
By ERNEST PRUDENT	
Adding Shovel and Trucks, Fidelity Makes Big Shovel a Dragline.	82
By FRED W. RICHART	
Consolidation No. 93 Builds a Large Maintenance Shop Below Ground	85
With Radio Sets, Motormen Talk to Mine Office at Frances Mine.	89
Industry Gets Better Priority Ratings for Repair and Maintenance.	101
Editorial	61
Questions and Answers	93
Washington Roundup	64
Operating Ideas	97
Mining Men's Forum	91
News From the Field	101
New Equipment	133

SYDNEY A. HALE, Editor			
R. DAWSON HALL	IVAN A. GIVEN	J. H. EDWARDS	LOUIS C. McCARTHY
FRED W. RICHART	Capt. CHARLES H. LAMBUR JR. (on leave)		PAUL WOOTON
	WALTER M. DAKE, Consultant		
	H. W. CLARKE, Vice President		

Contents Copyright 1942 by
McGraw-Hill Publishing Company, Inc.

JAMES H. McGRAW, Founder and Honorary Chairman

Publication Office, 99-129 North Broadway, Albany, N. Y.

Editorial and Executive Offices, 330 West 42d St., New York, N. Y.

JAMES H. McGRAW, JR.
President

B. R. PUTNAM
Treasurer

HOWARD EHRLICH
Executive Vice-President

D. C. McGRAW
Secretary

MASON BRITTON
Vice-Chairman


J. E. BLACKBURN, JR.
Director of Circulation

Branch Offices, 520 North Michigan Ave., Chicago; 68 Post St., San Francisco; Aldwych House, Aldwych, London, W.C. 2; Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Atlanta, Ga.

"IN CASE OF FIRE

Use

CARDOX




Throughout mines that have adopted the **CARDOX Non-Explosive Mining Method**, placards reading *"In Case of Fire Use CARDOX"* testify to the value of this product in protecting property as well as profits.

● Like the benefits of increased realization, safety and operating economies secured when coal is broken down with **CARDOX**, the advantages of this non-explosive medium for extinguishing various kinds of mine fires are of major importance.

There is always at hand an efficient, easy-to-use fire fighter. The carbon dioxide used in **CARDOX** Tubes spreads rapidly and uniformly... even against a strong draft. It is a non-conductor of electricity, penetrates where water or rock dust cannot reach, does not wet or otherwise damage any material or machinery with which it comes in contact, quickly clears away smoke, and has exceptional fire smothering and cooling properties.

A free test of **CARDOX** in your own mine will demonstrate its value as a property protector, its superiority for protecting coal structure, permitting maximum cutter bar and loader efficiency, and for assuring greater ultimate profits.

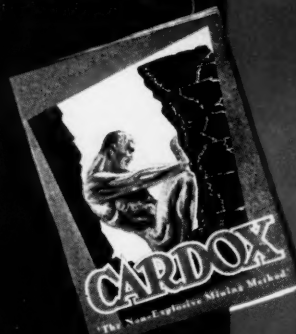


Illustrations show how a **CARDOX** Tube is used to extinguish an incipient electrical fire, and two racks of **CARDOX** Tubes ready for breaking coal or fire fighting duty.



CARDOX CORPORATION

BELL BUILDING • CHICAGO



Write today for brochure giving full facts about **CARDOX** advantages and our non-obligation demonstration at your mine.

HOW'S BUSINESS

(CONTINUED FROM PAGE 5)

No seam is now too level or too little for extraction. . . . **Mining keeps step** with the modern world: Motormen "radio" from their locomotives to the car dispatcher or mine foreman (p. 89; Fidelity turns its record-making shovel into a dragline excavator and hauls its coal on diesel trucks in place of railroad cars and locomotives, p. 82; specially built cars whisk loading machines to the repair shop, without interference with the haulage system of the mine, p. 79; a repair shop is built underground 3½ miles away from the drift portal, p. 85; even truck mines are shuttleized and conveyorized, p. 76; Old Ben No. 8, "show mine" back in 1909, has not been content to continue to be that year's model but has modernized steadily so that it is a show mine today and still a big producer. It has track-type equipment. . . . **"Stepping on the gas"** is characteristic of the industry. On the editor's desk for early publication are articles on the recovery of barrier pillars at the Pittsburgh Terminal's No. 8 mine. This equipment permits the roof slate to be kept in place, saving about 30 per cent of the miner's time and keeping the coal clean—a how-and-why article that takes the reader in among the timbers of the working face. . . . **Newest developments in electrical haulage** are the subject of another article. Mine locomotives also are stepping up: gearless cable reels, better tension adjustments, glass insulation, anti-friction armature bearings, grease-sealed axles, parallel connection of motors, etc.

GENERAL BUSINESS CONDITIONS

With war news and Washington dominating the headlines, a significant development escaped general notice: Production has begun to climb again, slowly but surely. For a while—after the automobile shutdown—employment, payrolls and aggregate output showed a tendency to slump. But new factories coming into operation, rapid conversion of non-defense plants to armaments, and a general step-up in hours worked per week have caused an upturn. *Business Week* Index on March 21 was at 175.2.

ELECTRIC POWER OUTPUT

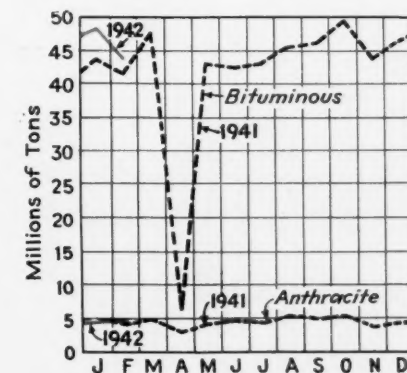
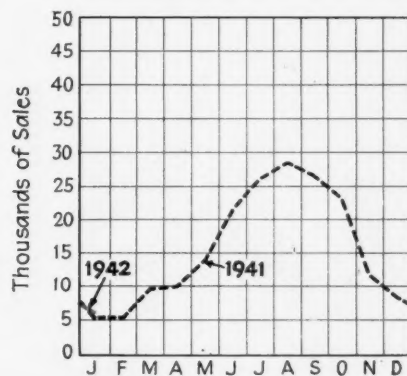
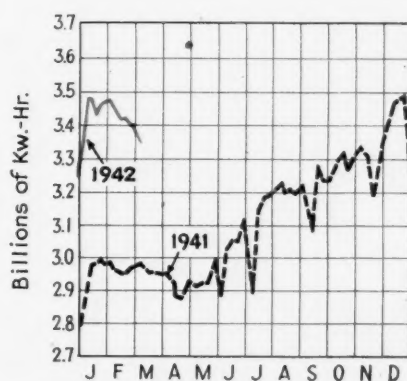
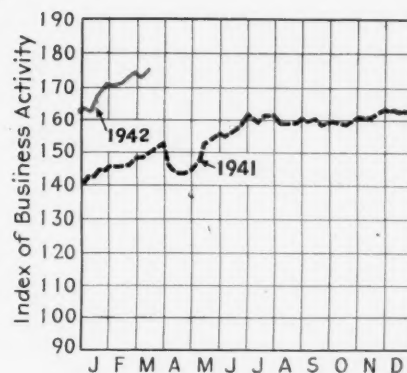
Output of electric energy by the electric light and power industry for the week ended March 14, according to the Edison Electric Institute, was 3,357,444,000 kw.-hr., following the seasonal pattern of 1940, 1939 and preceding years. The relatively high level of output in March last year contributes to the low percentage increase of 12.5 registered. Production for other recent weeks was: Feb. 14, 3,422,000,000 kw.-hr.; Feb. 21, 3,424,000,000; Feb. 28, 3,410,000,000; March 7, 3,392,000,000 kw.-hr.

COAL STOKER SALES

Mechanical stoker sales in the United States in January last totaled 6,394 units (U. S. Bureau of the Census from 101 manufacturers), compared with 8,592 in the preceding month and 5,506 in January, 1941. Sales of small units in January last were: Class 1 (under 61 lb. of coal per hour), 5,463 (bituminous, 4,768; anthracite, 695); Class 2 (61-100 lb. per hour), 430 (bituminous, 399; anthracite, 31); Class 3 (101-300 lb. per hour), 260.

COAL PRODUCTION

Bituminous coal produced by United States mines in February last (preliminary) totaled 43,840,000 net tons, according to the Bituminous Coal Division, U. S. Department of the Interior. This compares with 48,540,000 tons in the preceding month and 41,695,000 in February, 1941. Anthracite tonnage in February last, according to the U. S. Bureau of Mines (preliminary), was 4,739,000, as against 4,532,000 (revised) in the preceding month and 4,432,000 in February, 1941.



MANASITE—the Detonator of Tomorrow— Available Today

**Greater Safety *plus* Dependable Performance
Helps to Increase Production**

Safety, today, is more vital than ever. Every accident means an irreplaceable loss not only of man-hours but of machine-hours—a serious cut in the effectiveness of the country's production equipment.

Inadvertent mishandling of explosives and detonators is more probable today—both because of the many new men being put on, and because of the rush for production.

By helping to avoid such accidents, Atlas Manasite Detonators are doing their part to increase production.

Atlas Manasite is the result of years of experience in making blasting caps. Before Manasite

was introduced, Atlas made hundreds of millions of detonators—good detonators, as reliable and as relatively safe as any produced at the time. Then, through chemical research, Atlas changed the blasting-cap picture. With Manasite, an exclusive method of manufacture—plus the use of hexanitromannite as a detonating agent—substantially increased the margin of safety. While no blasting cap can be called “safe,” Atlas Manasite Detonators make safety precautions more effective than ever.

Today, with increased production a “must,” can you afford to overlook this advance in safer blasting?

MANASITE—Reg. U. S. Pat. Off.



ATLAS MANASITE DETONATORS
for GREATER SAFETY

ATLAS EXPLOSIVES
“Everything for Blasting”

CHEMICALS
ATLAS
EXPLOSIVES

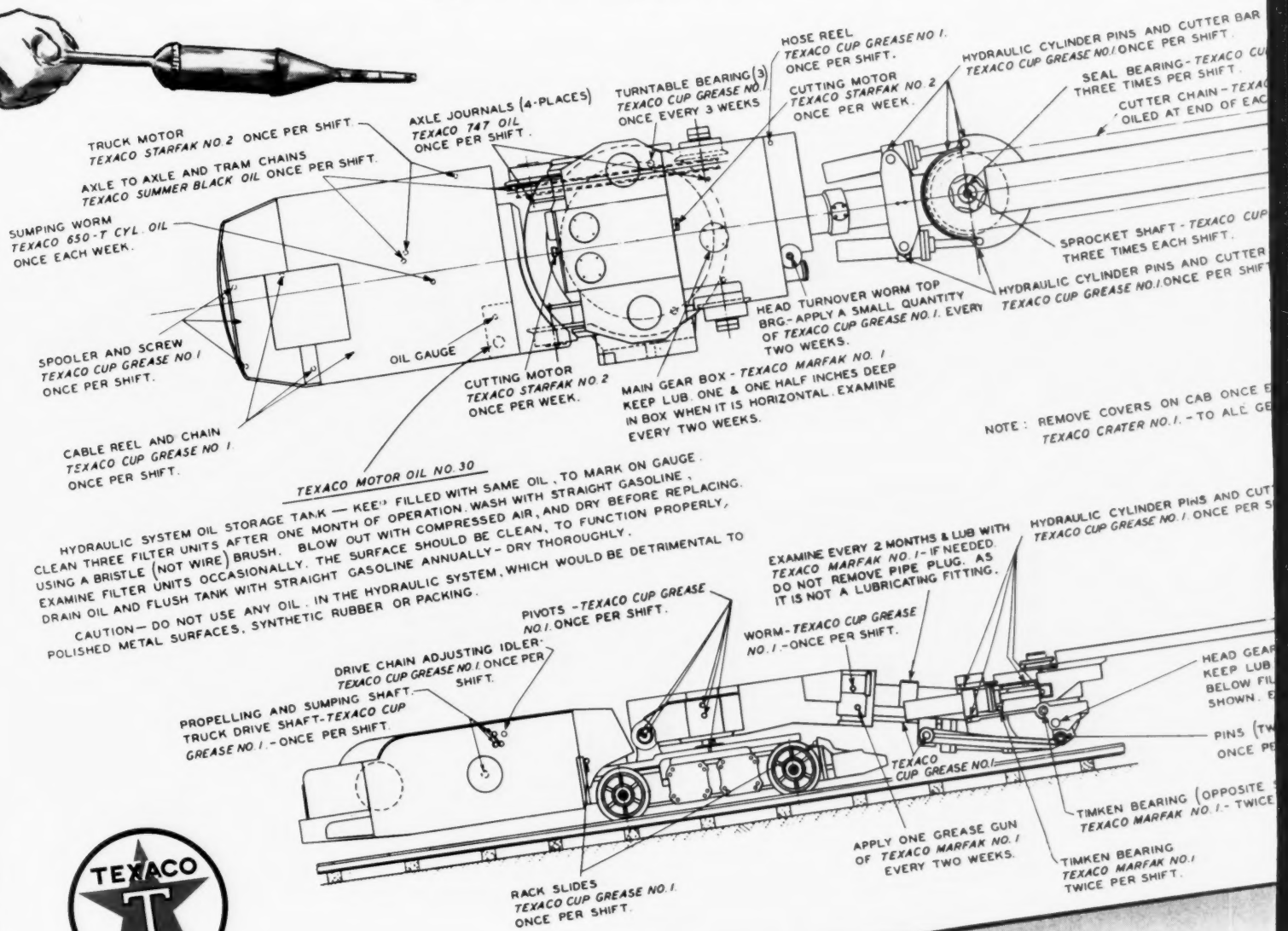
ATLAS POWDER COMPANY, Wilmington, Del. • Offices in principal cities • Cable Address—Atpowco

WAR-TIME MAINT

Prevent Break



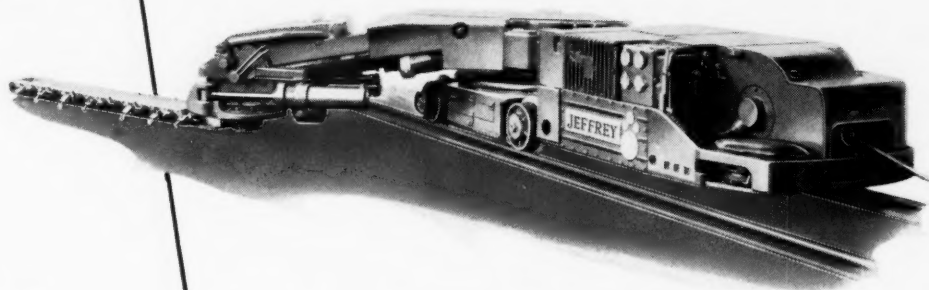
TEXACO MAINTENANCE LUBRICATION CHART JEFFREY UNIVERSAL COAL CUTTING MACHINE CLASS 29-U



TEXACO MAINT

MAINTENANCE

breakdowns



Texaco Maintenance Lubrication Charts for Cutters, Loaders, Locomotives, etc.

Ready to be tacked up on the wall as lubrication guides to all, Texaco Maintenance Lubrication Charts show exactly *where* and *when* to service each lubrication point in the specific makes and models of locomotives, cutters, loaders, etc., in use in your mines.

Texaco Maintenance Lubrication Charts have been worked out by Texaco Engineers in cooperation with the Engineers of leading coal mining machinery builders, and will be revised to reflect changes in design.

Using these Charts, you will get scientific lubrication for each machine.

You will find Texaco Lubrication Charts authentic, practical, easily followed . . . a war-time necessity assuring the continued high output operation of your equipment.

For full-size charts covering the various makes and models of *your* specific equipment, write, wire or 'phone The Texas Company, *National Sales Division, Dept. C, 135 East 42nd Street, New York City.*

MAINTENANCE LUBRICATION

FOR THE COAL MINING INDUSTRY



Real Help

for the COAL MINING INDUSTRY

Faced with the war-time necessity of producing the greatest tonnage in American coal mining history, the industry is working each piece of equipment to its topmost limit of output.

To keep this equipment going ... in the face of the shortage

of skilled help gone to war... demands something new from lubrication.

On the inside pages of this announcement is disclosed what we believe to be the most important lubrication idea offered the coal mining industry.





See you in Cincinnati



THE

NETHERLAND PLAZA HOTEL

We had hoped to greet you at our Texaco booth at the Coal Show, but with the Exposition called off at the request of the War Production Board, The Texas Company will be glad to see you instead at our quarters in The Netherland Plaza Hotel, April 27th and 28th.

Visit us and see at first hand how Texaco's War-time Maintenance Service can help you increase your tonnage. Remember: The Netherland Plaza Hotel!

6
INDUSTRY

war...
y from

of this
d what
ost im-
red the



THE
TEXAS
COMPANY



Dumped 12,000 Times and Still Good as New



Here's The Car

● This is equal to 20 years of ordinary dumping of mine cars. Each car has dumped 12,000 times and discharged 132,000 tons of coal already in less than 4 years. Some have dumped 15,000 times, yet these cars are still debutants; not nearly grown up. The man who uses them says this—"if you told anyone these cars had been dumped 12,000 times and then showed him the cars and doors, he might not want to believe you."

If anyone is still skeptical about the amazing service to be got from S-D "Automatics" at this day and age, we suggest that an alienist be summoned to examine his brain.

These cars are built strongly. They are

exceedingly rugged. Yet, they are handled gently. They do not turn upside down. They are not tipped on end. They are not strained or racked. They are not even uncoupled. They merely are pulled across a hole. Why, then, for goodness sake shouldn't they last immeasurably longer than the old-fashioned style of cars?

We suggest that you anticipate your car requirements as far as possible. We are working at full capacity; doing our best to make reasonably prompt deliveries. Even so, please follow the suggestion of the War Production Board and anticipate your requirements. Order your S-D "Automatics" and S-D "Floater" Ball Bearing Trucks as far ahead as possible.



REMEMBER OUR RENTAL PLAN!

We gladly rent money-saving S-D "Automatics," with option to purchase. The average rental cost over a 15 year period is less than 2¢ per ton of coal hauled. The average savings for you will be many times this small rental fee. You cannot lose! Ask for details.

Sanford-Day Iron Works, KNOXVILLE, TENNESSEE



"Ss-sh-h-h, Sir! Captain Clunk is selecting a shell to fit his mood"

Luckily, the armed forces of this nation aren't run that way. But suppose the crews of our anti-aircraft guns *were* supplied with a variety of shapes and sizes of shells. And suppose the battery commanders *did* follow their whims in selecting ammunition. There'd be h--l to pay, wouldn't there?

That's why individualism, personal preferences and prejudices in time of war have to go!

America is a nation of individualists. That's one of the reasons you and I are Americans—we like the democratic way of living and we like being individualists. But there comes a time when even the most confirmed individualist must choose between survival and individualism. And survival comes first!

How does that affect your job and ours? It means we must standardize—standardize our production routines — standardize our pur-

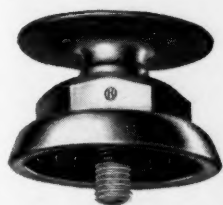
chases — and standardize our manufacture. For standardization is the most effective tool we have for making our wartime production count!



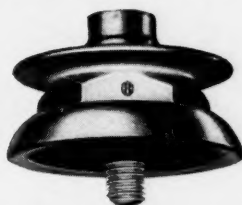
And Here's How You Can Make All Our Jobs Easier, More Efficient

Standardize on one type of hanger, clamp, rail bond, etc., to do the job in your mine. (If possible, select your standard item from the adjacent selection.) Order in convenient shipping quantities. By doing this you'll enable us to streamline our manufacturing processes and you'll simplify your own installation, stocking and bookkeeping problems.

We recommend
THESE O-B PERFORMANCE-PROVED PRODUCTS TO YOU



Universal-2 Hanger



Type K-3 Hanger



Universal Trolley Wire Splicer



Type D Trolley Frog



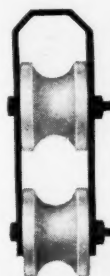
Type A-3
Expansion Bolt



Bulldog Trolley Clamp



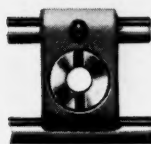
Type PC Trolley Frog



Type C Feeder Wire Insulator



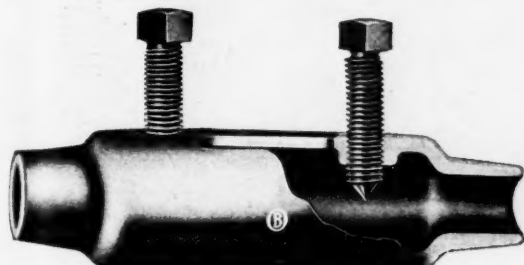
Bulldog
Dual Clamp



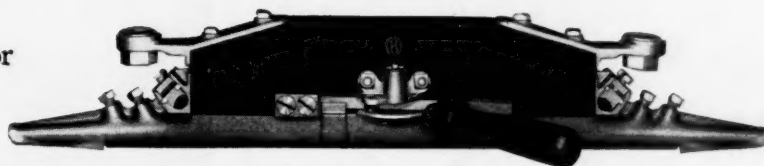
Mine Catenary Clamp



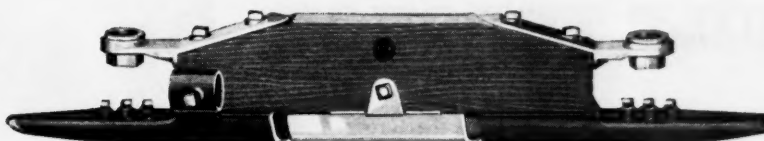
Bulldog Feeder Sling



Feeder Wire Splicer



Type M-6 Section Insulator Switch



Metal Underrun Section Insulator

OHIO  BRASS
 MANSFIELD OHIO · U · S · A
 Canadian Ohio Brass Company, Ltd. Niagara Falls, Ont., Canada

2295M

BUY United States Defense Bonds and Stamps

That Industry may
profit by their use ★ ★



CONFIDENCE

BUILT THROUGH

DEPENDABLE

Service

★ ★ ★ ★ ★ ★ ★

THE POLICY of American Cyanamid & Chemical Corporation is to manufacture explosives and blasting supplies of the highest quality, and to supplement them with competent research and technical services to the end that industry may profit by their use.

These services begin in the research laboratories and at the plants.

Modern laboratories have been provided for accurate control of processes and products. Research is carried on continuously by trained chemists on problems pertaining to the manufacture and use of explosives and blasting supplies. Plants are located at points near the sources of raw materials and convenient to the industries they serve.

Competent sales representatives are at your call for discussions in connection with deliveries or blasting problems. Supplementing the sales force, a group of engineers trained in the use of explosives is available for consultation on the problems of mining, quarrying, construction projects and other applications of these products.

Distributing magazines are located at strategic points. These are under the care of personnel trained in the handling of explosives. It is their responsibility



to properly care for stocks and maintain facilities which enable them to render prompt delivery service.

The consummation of these carefully planned steps results in consumer "Confidence built through Dependable Service."

HIGH EXPLOSIVES
PERMISSIBLES
BLASTING POWDER
BLASTING ACCESSORIES

American Cyanamid & Chemical Corporation



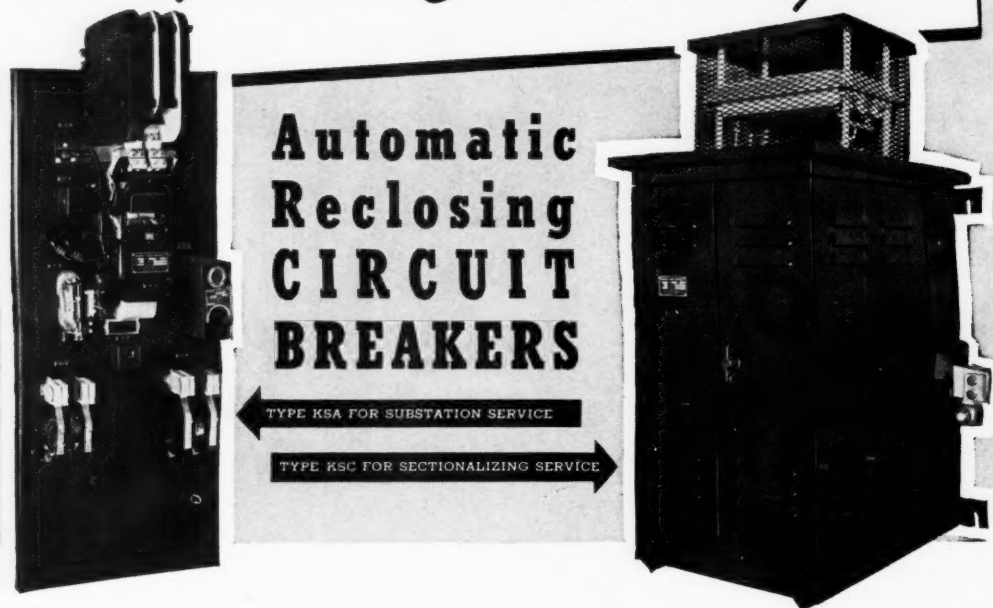
A Unit of American Cyanamid Company

30 ROCKEFELLER PLAZA • NEW YORK, N. Y.
EXPLOSIVES DEPARTMENT

SALES OFFICES: Pittsburgh, Pa. Bluefield, West Va. Scranton, Pa. St. Louis, Mo. Chicago, Ill.
Pottsville, Pa. Hazleton, Pa. Maynard, Mass.

FOR PEAK COAL OUTPUT

Prevent Needless Power Interruptions



AUTOMATIC RECLOSING CIRCUIT BREAKERS contribute directly to improved production in mechanized mines.

In *substation service*, Type KSA helps production by eliminating time losses resulting from disturbances on feeder circuits. This is true of the semi-automatic station which is attended only in starting and stopping and of the full-automatic station which requires nothing but rare, periodic attendance.

In *sectionalizing service*, Type KSC helps production by providing much better continuity in the operation of mining, loading and haulage equipment. Fire hazards are reduced; maintenance is lessened; total energy consumption and power demand are lowered.

I-T-E is eager to help in any effort to produce more coal. Our factory, busy as it is in these days, has capacity for prompt action in meeting the demands of the vital mining industry.

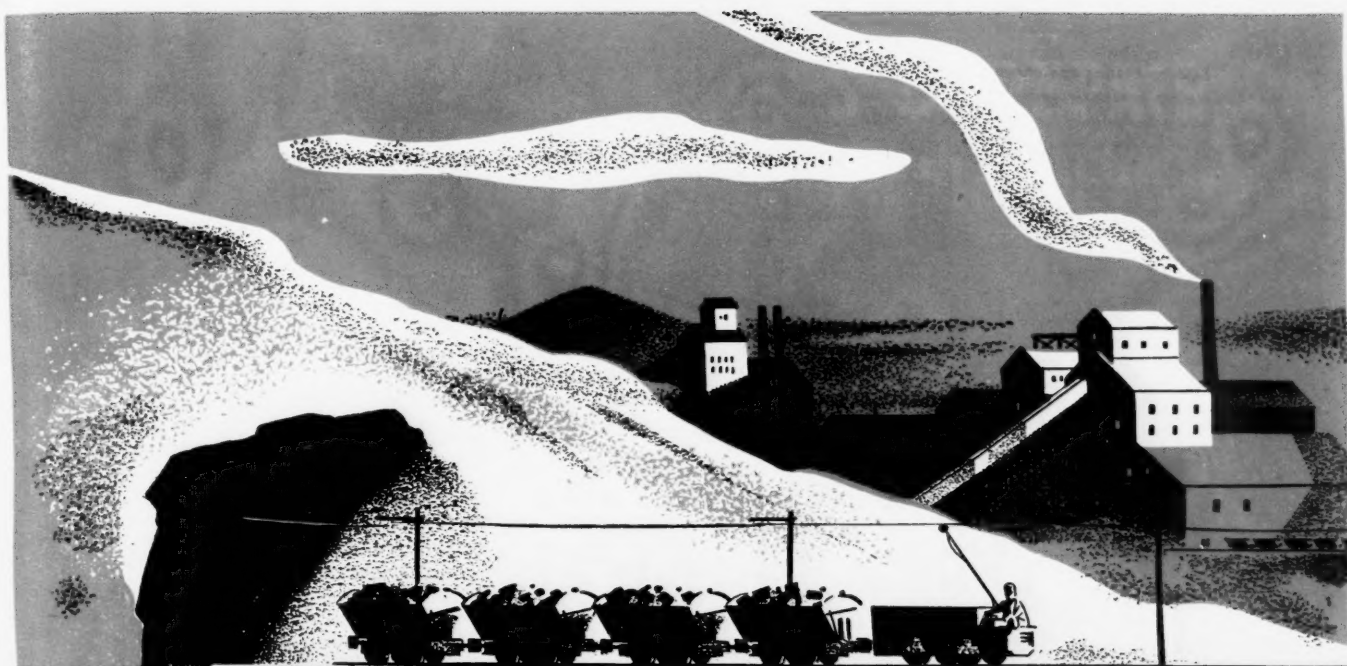
I-T-E

Representatives in Principal
Mining Areas



CIRCUIT BREAKER CO.

PHILADELPHIA, PA.



“Keep ‘em moving”

**Electrical power and the research-built
Anaconda mining cables that carry it play a
vital role in our nation's mine production**

DEEP in the earth, men today bore steadily downward for the mineral riches that are making America's war-front the most impregnable in the world.

Important to their production is economical electrical power . . . not only because of copper's ability to carry electrical energy more efficiently than any other commercial material, but also because Anaconda has developed insulations that have the highest measure of resistance to abrasion and corrosion from mine waters, acids and alkalis.

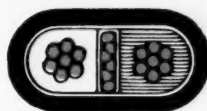
The research that built these wires and cables

continues apace, daily developing product improvements and many new products which, although not now available for civilian purposes, are helping our national war effort.



This familiar trade-mark symbolizes the best efforts of modern research and production.

42250



Insure Safety—Anaconda's exclusive, 2-conductor parallel Sunex Securityflex with ground wire affords a simple, effective method for grounding loaders, conveyors, cutters. (Today, all Sunex Securityflex* is urgently needed for defense . . . a situation that will not change until victory is assured.)

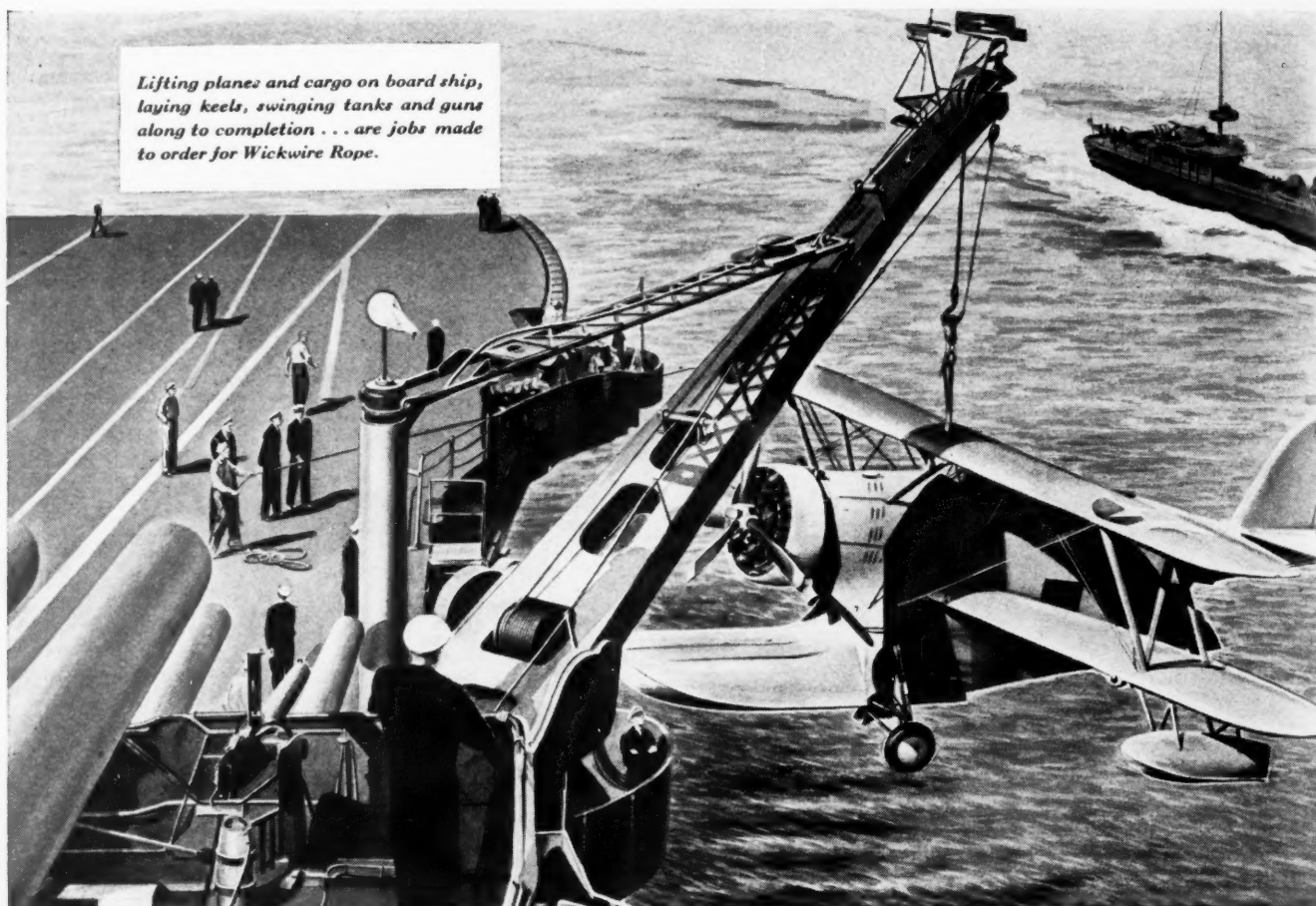
* Trade Mark Reg.

Sunex Securityflex

ANACONDA WIRE & CABLE COMPANY

Subsidiary of Anaconda Copper Mining Company

GENERAL OFFICES: 25 Broadway, New York City • CHICAGO OFFICE: 20 North Wacker Drive • Sales Offices in Principal Cities



Lifting planes and cargo on board ship, laying keels, swinging tanks and guns along to completion . . . are jobs made to order for Wickwire Rope.

BRINGING Warbirds Home to Roost

Another Job for Wickwire Rope

It takes a lot of "heavy work" to win this war—and where the hoisting, hauling and pulling are toughest, there you'll find Wickwire Rope on the job.

The vital need for this vital steel tool of heavy industry points up a message to all users of Wire Rope.

Make your Wire Rope *last longer* . . . save steel too . . . by taking proper care of Wire Rope on the job.

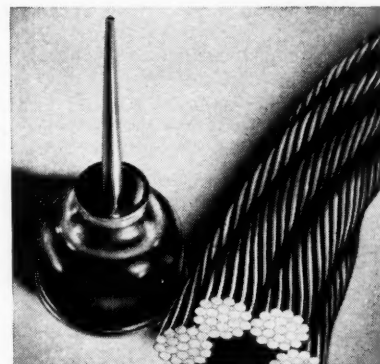
And when you need Wire Rope, depend on Wickwire regular lay or pre-formed Wissco lay. Let our field men figure your exact needs, and show you how to get the most for the least. Then, after the Wickwire Rope is on the job, our field represen-

tative will also consult with you on ways to get most efficient performance.

The uniformity and long-life of Wickwire Rope is assured by our manufacturing methods, which control every step from ore pile, to blast furnace, to open hearth, to finished rope.

. . .

To make wire rope last longer, it's important to consult our authoritative manual "KNOW YOUR ROPES." More than 25,000 users all over the world consider it a bible on the selection, application and handling of wire rope. Write for free copy to: Wickwire Spencer Steel Company, 500 Fifth Ave., New York, N.Y.



THE LOWLY OIL CAN will pay dividends in making wire rope last longer. Internal wear can only be minimized by proper lubrication. Without it, there is excessive friction, binding and grooving which result in premature failure. This and forty more rope life-savers are fully described in our free booklet "Know Your Ropes."

SEND YOUR WIRE ROPE QUESTIONS TO WICKWIRE SPENCER



WICKWIRE ROPE

Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Seattle. Export Sales Department: New York City



TELL US YOUR NEEDS NOW

AND *Jeffrey*

MACHINES & REPAIR PARTS
will be available when required

Giving us your requirements now as to type and sizes of machines you will need this year and next will enable us, in cooperation with the government, to plan our production for those units most urgently required and permit us to anticipate your needs. You will be able to get the full benefit of your equipment when needed most and be assured of continued increased production to meet War-need requirements.

COAL CUTTERS

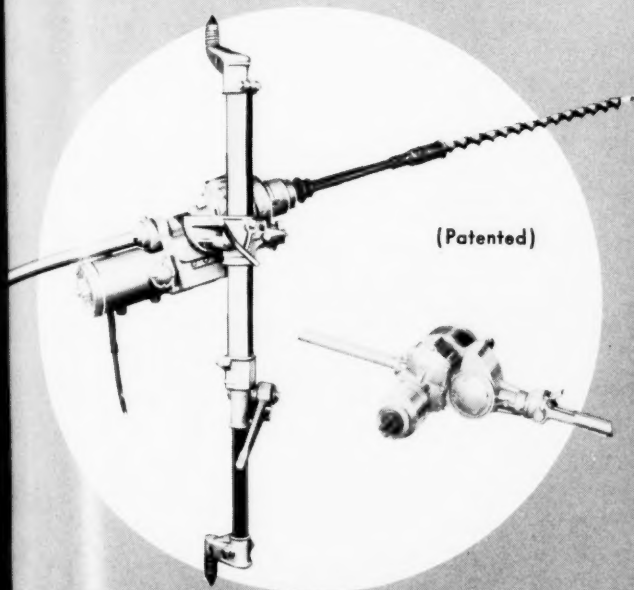
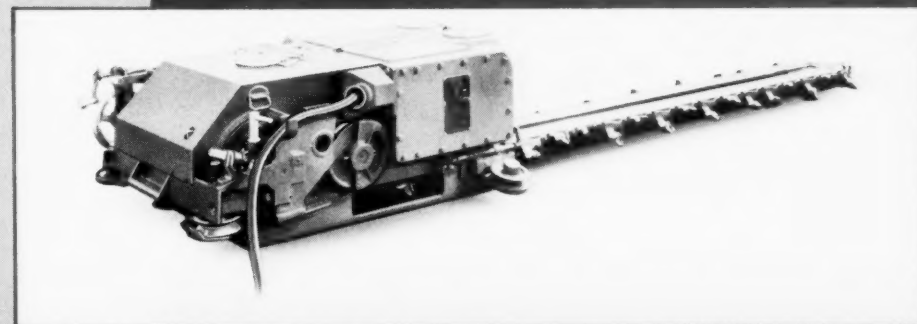
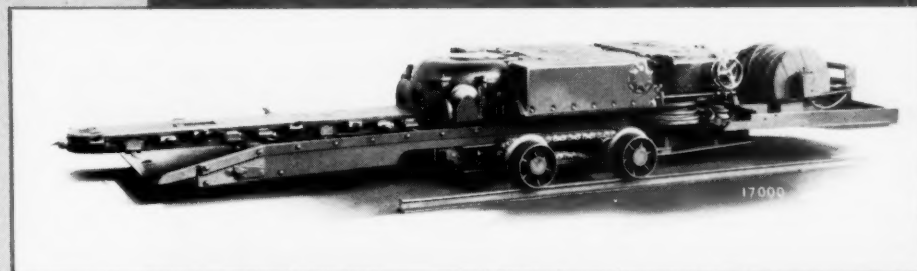
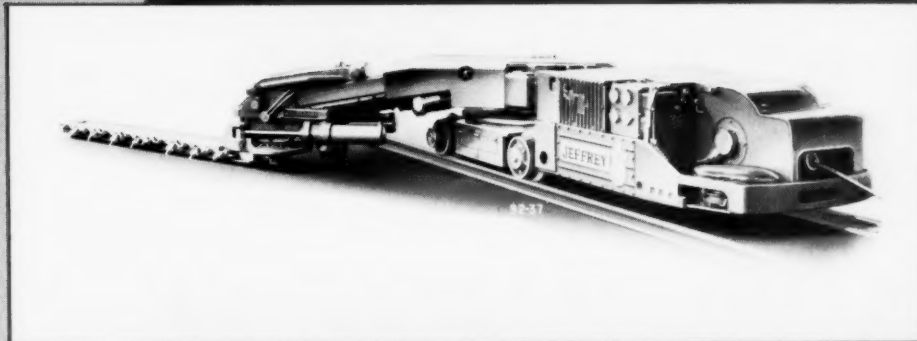
Simple, rugged and dependable units with the ability to stand up in day-after-day service. 29-U Universal (track type or crawler-mounted); 35-L low vein continuous duty shortwall; and 35-B shortwall developed for low-seam conveyor mining — shown at the right (patented).

TRACK TYPES — Patented and Patents Pending. Also licensed under the patents of E. C. Morgan. Pat. Nos. 1706961, 1706962, 1707132, 1707133, 1953325, and 1953326.

For continued efficiency use spare parts identical point for point with those they replace. Jeffrey renewal parts are manufactured to precisely the same high standards as govern original equipment.

DRILLS . . . AND DRILLING MACHINES

For speeding up drilling operations and placing shot holes most advantageously. Self-propelled unit (right) may be equipped with one or more rotary drills — reaches anywhere between roof and floor in rooms up to 30 feet wide.



(Patented)

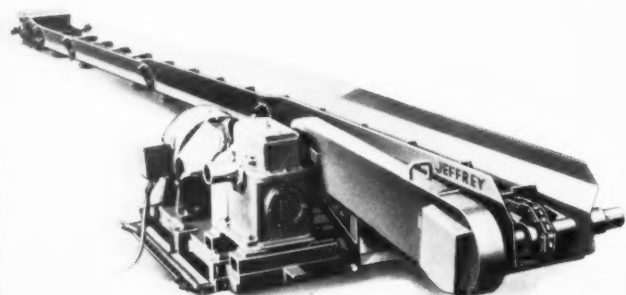
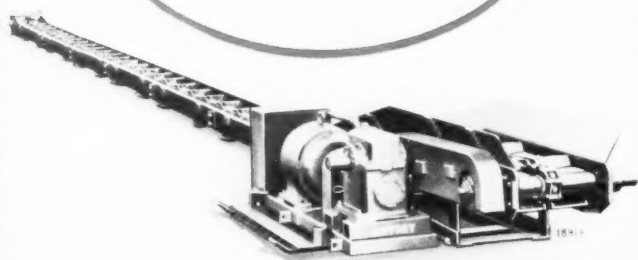
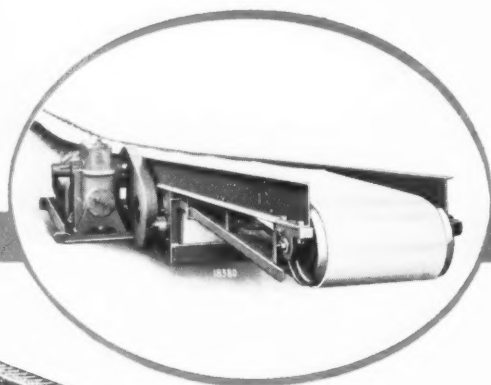


A-6 Fast Drill and A-7 Hand-held Drill (above).

ANTICIPATING JEFFREY EQUIPMENT NOW . .

Jeffrey

UNDERGROUND LOADERS AND CONVEYORS . . .



LOADERS — Mechanized loading for all conditions can be made profitable with Jeffrey loading machines. Two views of Jeffrey L-600 frontal attack, track mounted loader (Patented) are shown above. Capacity is there when needed — very flexible — has finger-tip hydraulic control and automatic cable reel to speed its movements.

UNDERGROUND CONVEYORS — To maintain more efficient production, specially under such conditions as bad grades, wet places or low voltage — Jeffrey positive-motion conveyors (Patented) are the solution. 17 different designs, chain as well as belt types, to meet all coal mining conditions. Three types are shown.



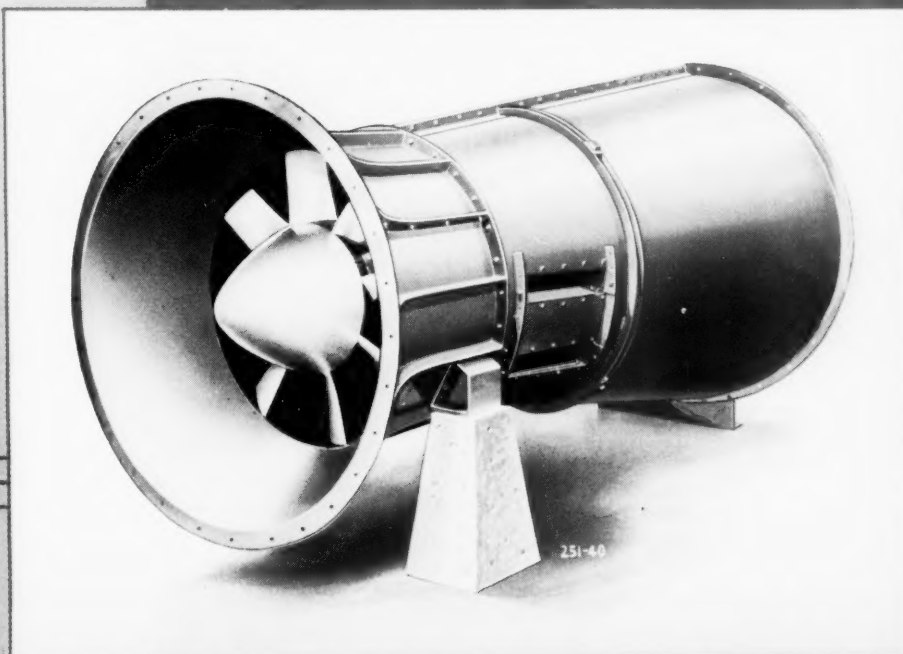
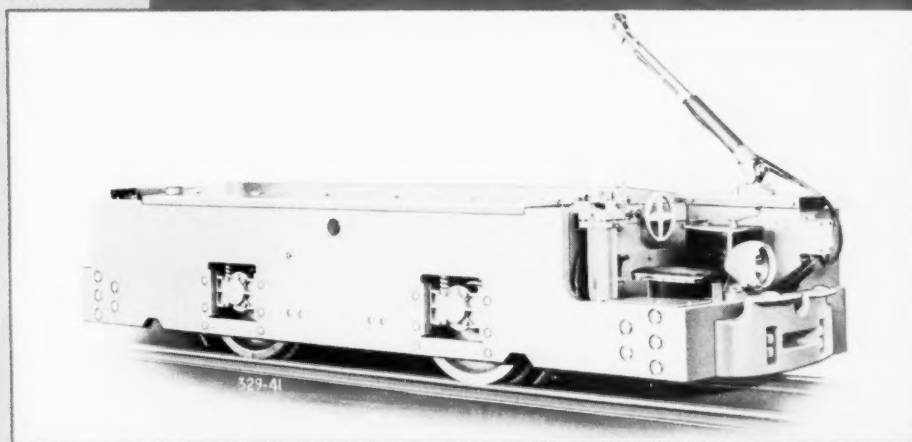
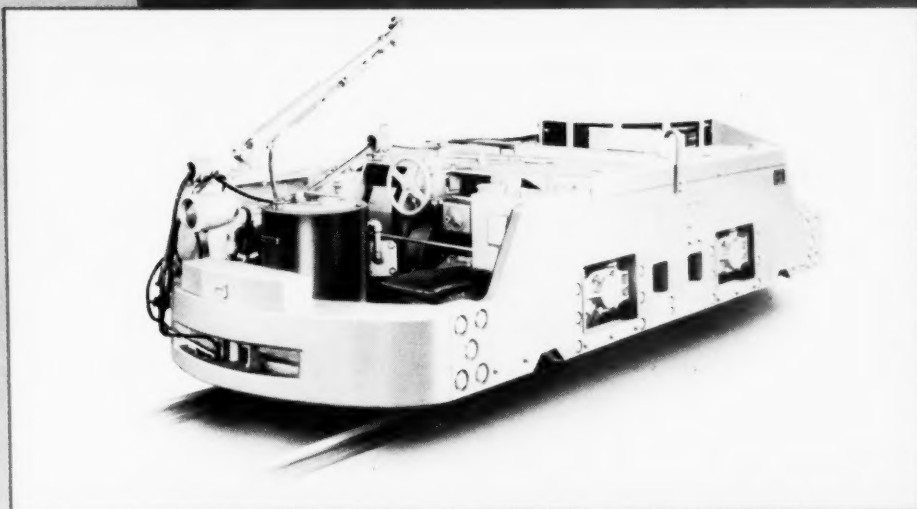
• WILL FACILITATE YOUR PRODUCTION LATER

LOCOMOTIVES • • • MINE FANS

LOCOMOTIVES—A type and size for every mine transportation service containing advanced mechanical refinements for dependable performance and low cost maintenance. Haulage and gathering units (shown at right) — trolley, cable reel and storage battery types — and trammers.

VENTILATION—Maximum efficiency—compact design—safe working conditions—increased employee comfort—accelerated production—greater profit . . . all possible when using Jeffrey mine fans. The type 8 H Aerodyne (right) features: high capacity, adjustable blades, low speed, pressures up to 10 inches—will maintain static efficiencies well over 80% over a wide range of duties. (Patented.)

The small Aerodyne Midget tubing blower (Patented) is shown below—a lightweight, streamlined propeller-type unit of flame-proof construction.



COAL PREPARATION

by Jeffrey

JEFFREY JIGS

Jeffrey jigs have been developed to produce a uniform product — high recovery — maximum capacity on a comparatively small investment and low operating dollar. Specially-designed units for preparing small or large tonnages of quality coal. An air-operated (Baum-type) jig (Patented) with six cells is shown left. Note cut-away section to show float control and refuse ejector.

SIZING

Crushers to convert slow-moving lump coal to stoker size in one operation with minimum fines — sizes that are wanted when they are wanted. Selective processing without waste that's what it is. The "Flextooth" (Patented) and single-roll types are shown left.

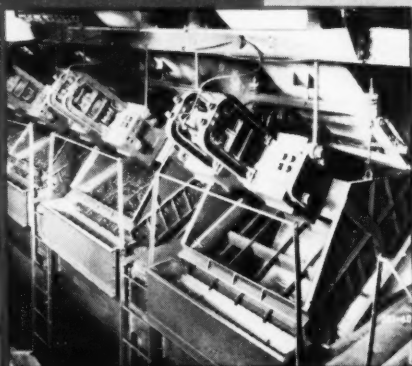
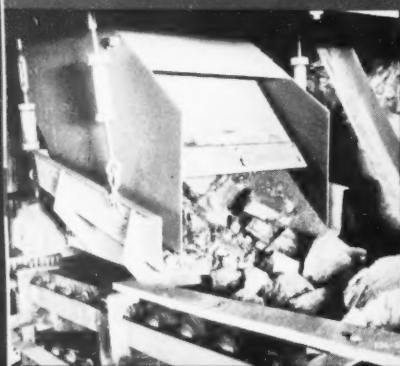
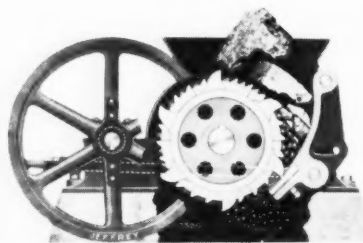
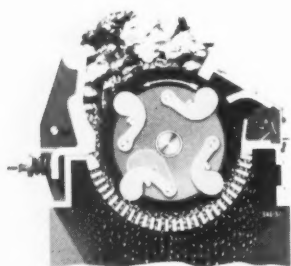
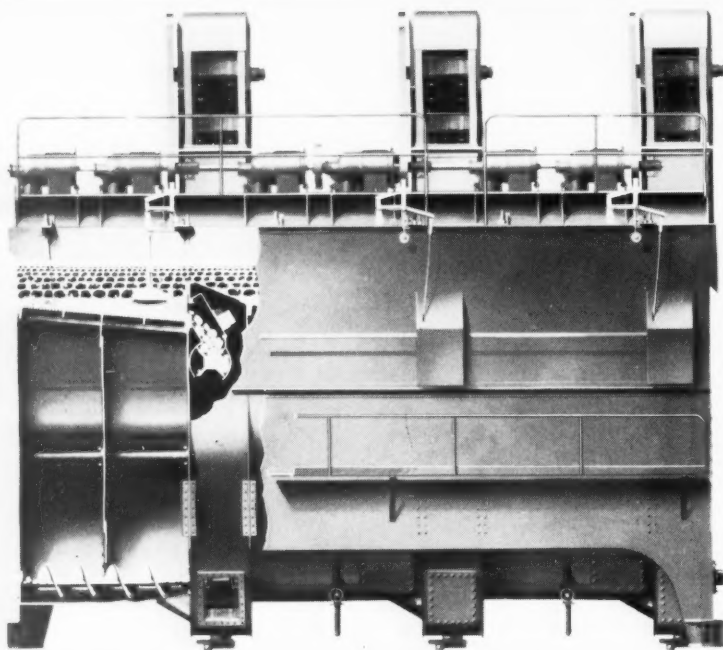
FEEDERS AND SCREENS

Electric vibrating type — setting new standards in delivering coal to crushers, conveyors and cleaning systems . . . and in sizing. May be totally enclosed — no moving parts — nothing to lubricate — and are constantly adjustable. (Patented.)



CHAINS

Various types for coal cutting, elevating, conveying and power transmission in the coal mine and tipp'e. Also a complete line of sprockets, gears, pinions, shafting, hangers, etc.



THE JEFFREY MANUFACTURING COMPANY
912-99 NORTH FOURTH STREET • COLUMBUS, OHIO

A MEMORANDUM FOR THE SECRETARY OF WAR
IN THE INTEREST OF WAR PRODUCTION

For over 33 years we have built Mechanical Loading Machines exclusively. To meet the present emergency demands, we have increased production to build as many Whaley "Automats" as the supply of the needed materials will permit.

We know that materials are made available when they arise, and that orders anticipated by manufacturers required for them are filled.

A MEMORANDUM FOR THE SECRETARY OF DEFENSE

IN THE INTEREST OF WAR PRODUCTION

For over 33 years we have built Mechanical Loading Machines exclusively. To meet the present emergency demands, we have increased production to build as many Whaley "Automats" as the supply of the needed materials will permit.

We know that materials are made available when they arise, and that orders anticipated by manufacturers required for them are filled.

No doubt you know that materials are made available only as the need for them arises, and that orders for such materials must be anticipated by manufacturers well in advance of the time required for deliveries.

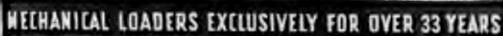
Therefore, it will help all of us if you will give immediate thought to the suggestions of the War Production Board, namely: that you analyze your production facilities and anticipate your requirements for "Automat" loaders for 1942 and 1943. Then let us help you determine how the Whaley "Automat" can be applied in your mine to meet your requirements for essential increased production and conservation of manpower. ,

Your cooperation will be greatly appreciated at this
 time, and you may be assured that we shall be happy
 to work with you. Please do not hesitate to call on
 our engineers for information.

Myers-Whaley Company
(Wm) Whaley
 President

Myers-Whaley Company
Wm Whaley
President

Knoxville, Tenn.



VICTORY

to

Except for gasoline and oil consumption for internal combustion engine use, **COAL SUPPLIES 50% OF ALL AVAILABLE ENERGY IN THE UNITED STATES.**

Of the coal supplying this energy, 85% is cut by machine. **THESE COAL CUTTING MACHINES**, therefore, **DETERMINE** to a great extent, the available **POWER** for our **VICTORY EFFORT.**

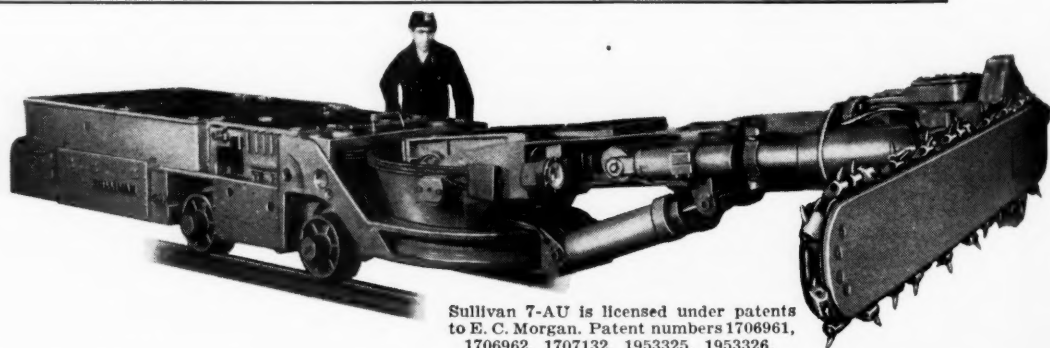
Sullivan Coal Cutters are daily establishing new records for speed and continuous service — records that reflect their advanced design and rugged construction.

Only SULLIVAN Offers:—

- Longer reach and complete splash lubrication of all working parts in a "universal" track cutter.
- Lever-controlled rope drums for faster and easier short-wall operation.
- Shortwalls in horsepowers ranging from 10 to 50 H.P.
- A successful, floor type overcutter, adjustable to variations in seam thickness.

Sullivan urges that you anticipate your cutting machine requirements as far ahead of need as possible and check with the Sullivan branch office conveniently located in your vicinity.

THE SULLIVAN 7-AU TRACK CUTTER



Sullivan 7-AU is licensed under patents to E. C. Morgan. Patent numbers 1706961, 1706962, 1707132, 1953325, 1953326.

Because of its **LONG REACH** (50% longer than any other track cutter on the market), the 7-AU will cut and shear room necks from straight track and in addition the track may be kept back from the face for more practical use of Caterpillar-mounted loading machines. For faster mechanical loading, the 7-AU will keep approximately a square face and a straight rib, and for hand loading, two cuts can be made with one laying of track. The Sullivan 7-AU cuts anywhere in the seam. It will top cut, center cut, bottom cut, rib shear, center shear, angle shear, slab cut or slab shear, and, in addition, it has bar tilt and roll. Two motors, a 50 H.P. cutter-chain motor and a 26 H. P. motor for tramming and operating the hydraulic pump, afford ample power for **GREATER PRODUCTION** and **LOWER COSTS.**

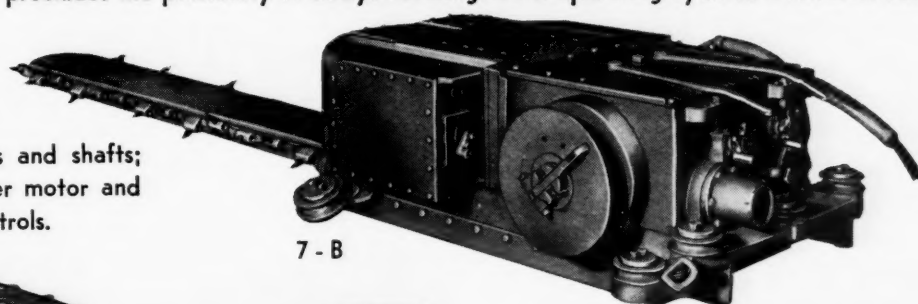
SULLIVAN COAL CUTTERS

Vital to Production

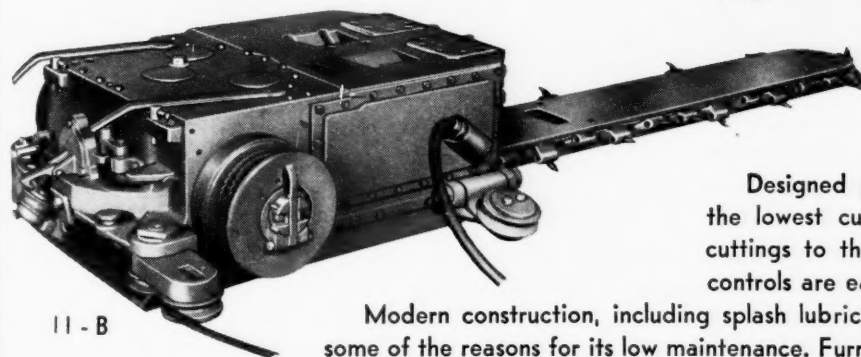
THE SULLIVAN 7-B SHORTWALL

The 7-B is particularly adaptable to modern mechanized mining, due to the fact that its cutting capacity is greater than that of modern loading units. This precludes the possibility of delays occurring in the operating cycle as a result of the loader catching up with the cutter.

The 7-B stays underground longer because it has complete splash lubrication; anti-friction bearings at all load bearing points; alloy steel gears and shafts; slow speed, heavy duty, 50 horsepower motor and trouble-proof automatic electrical controls.



7 - B



11 - B

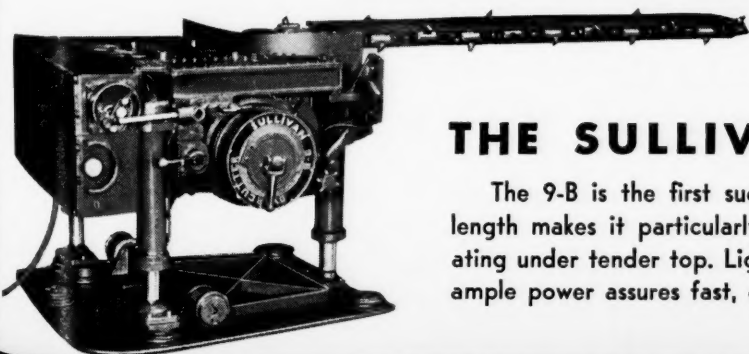
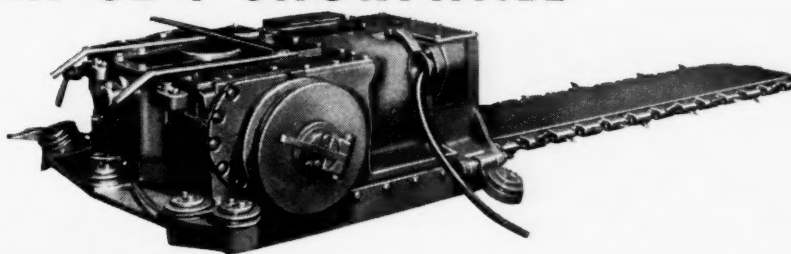
THE SULLIVAN 11-B SHORTWALL

Designed primarily for conveyor mining, the 11-B is the lowest cutter in its power range which discharges cuttings to the rear. The 11-B is only 58" long and all controls are easily handled from rear or side of machine.

Modern construction, including splash lubrication and alloy steel gears and shafts, are some of the reasons for its low maintenance. Furnished with 20, 35, or 50 horsepower motors.

THE SULLIVAN 5B-1 SHORTWALL

This most compact of all shortwalls is successfully operating in all larger coal fields. Machine men like the 5B-1 for its compactness and ease of handling. Maintenance men appreciate both its complete splash lubrication and its anti-friction bearings at all load bearing points.



THE SULLIVAN 9-B OVERCUTTER

The 9-B is the first successful, adjustable, floor type overcutter. Its short length makes it particularly desirable for use with conveyor work when operating under tender top. Light weight and small size permit ease of handling — ample power assures fast, dependable cutting.

OTHER SULLIVAN Equipment

SHUTTLE BOX AND DRAGLINE CONVEYOR HAULERS

These Sullivan haulers are designed especially for use with Smith drag line conveyors, shuttle boxes or "scooters." Made in two basic designs; one having drums widely spaced to line up directly with sheave arrangement as found on the Smith drag line conveyor, and the other with drums set closely together and suitable for the many different shuttle box installations.

Sullivan haulers are the product of years of experience in the design and application of scraper haulers for underground use. Every detail of their design has been tried and proven in the toughest kind of underground service.

The clutches are of the external contracting type with easy-acting, conveniently located operating levers. Weight-actuated snubbing-brakes on each rope drum prevent overspinning when paying out rope. Write for Bulletin No. 76-F.

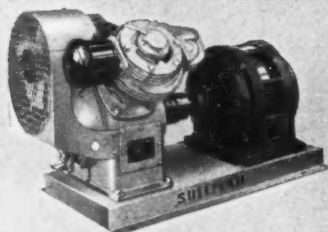
TWO- AND THREE-DRUM SCRAPER HAULERS

For all scraping operations Sullivan manufactures two- and three-drum Scraper Haulers made in many types and sizes with air or electric drive. Rope capacities are available up to 750 feet of 1/2" rope. Rope speeds can be supplied from 125 to 470 feet per minute and horsepowers range from 7 1/2 to 125. Write for Bulletin No. 76-Y.

"LOHITE" ROCK LOADERS

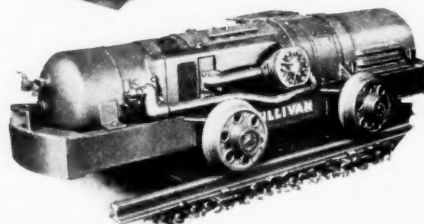
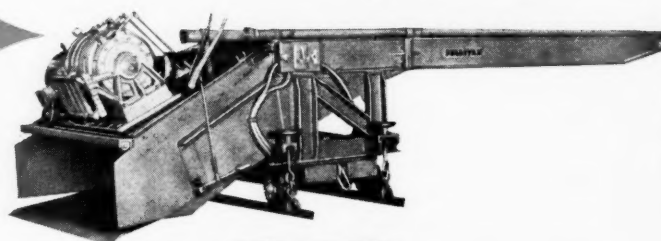
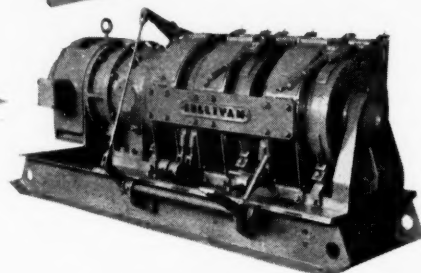
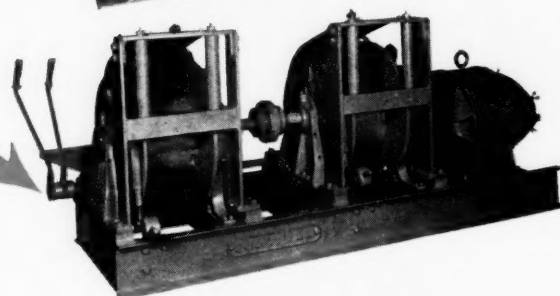
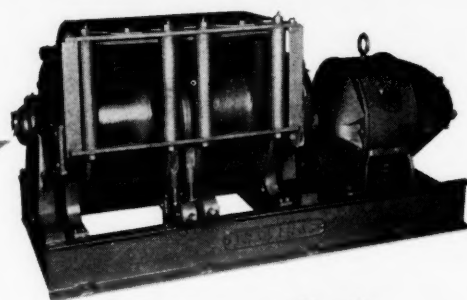
Sullivan "Lohite" Rock Loaders are used for digging, conveying and loading rock, when brushing top, lifting bottom or loading in a rock heading. They are outstanding with respect to low overall height, low initial cost, low upkeep costs, fast loading speed, mobility and simplicity of operation. The speed of loading is as fast as the speed of the car service. "Lohite" Rock Loaders in complete units, ready to operate, are built with either two or three-drum Sullivan Loader Haulers, in sizes up to 75 H.P. Write for Bulletin No. 76-A. Other loading and hoisting equipment by Sullivan are portable hoists, mine car loaders, mine hoists, air motors and scraper sheaves. Write for details.

WL-70 COMPRESSORS



driven from various types of power units. Mounted on pneumatic tires, the WL-70 is an ideal low height compressor for trackless mines. (Bulletin A-34.) For other air demands, Sullivan makes a complete line of compressors from 1/4 to 3000 H.P. Ask for Bulletins.

WL-70 Unitair compressors suitable for mines where air demand is small or as supplementary equipment. They are available in sizes from 96 to 233 C.F.M., with pressure ranges to 125 lbs. The WL-70 can be equipped as shown, or "V" belt



MINE-AIR COMPRESSOR

The Mine-Air Class WK-29 compressor is a low, completely

enclosed, two stage, fully automatic machine for underground service. It has air-cooled cylinders, intercooler and requires no water connections. The Mine-Air is equipped with micro-lift valves, anti-friction main bearings, force-feed lubrication, government approved electric motor, receiver, dual oil-bath air-filters, and all safety equipment in accordance with mine regulations. Track gauge 36 in. and over. Sizes available, 85 and 120 C.F.M. Maximum working pressure 125 lbs. Control panel contains all gauges and regulating devices. Ask for Bulletin A-19.

The Sullivan machine is in contact with the heated air at a time when the heater will for th



BIRMINGHAM, ALABAMA
619 North 10th St.
Phone 3-2086

BUTTE, MONTANA
24 West Granite St.
Phone 6721

CHICAGO, ILLINOIS
307 N. Michigan Ave.
Phone Randolph 7755

DALLAS, TEXAS
1914 Commerce St.
Phone Riverside 3404

DENVER, COLORADO
1815 California St.
Phone Keystone 6334

EL PASO, TEXAS
117 North Kansas St.
Phone Main 757

HUNTINGTON, W. VA.
728 - 8th Ave.
Phone 26445

KNOXVILLE, TENN.
201 Medical Arts Bldg.
Phone 2-4121

MIDDLESBORO, KY.
105 South 18th St.
Phone 231

NEW YORK, N. Y.
30 Church St.
Phone Courtland 7-6545

PITTSBURGH, PA.
47 Terminal Way, So. Side
Phone Everglade 1116

WASHINGTON, D. C.
1427 I Street, N. W.
Phone Executive 5860

SALT LAKE CITY, UTAH
117 W. Second South St.
Phone 4-3107

SCRANTON, PA.
809 Linden St.
Phone 2-8016

ST. LOUIS, MO.
2639 Locust St.
Phone Jefferson 1164

JOHANNESBURG, SOUTH AFRICA
21 Sauer St.

Vital to Production

ROCK DRILLS



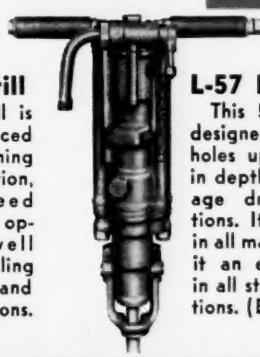
L-1 Rock Drill

A 30-lb. hand-held drill for shallow holes —has ample cutting speed and capacity for drilling coal in strip pits. Under-ground the L-1 is used for taking up bottom, trimming side walls, drilling hitches and cutting overcasts or break - throughs. (Bulletin 87-H.)



L-2 Rock Drill

This 45-lb. drill is a perfectly balanced machine, combining low air consumption, fast drilling speed and economy of operation. It is well suited for drilling rock in coal mine and strip pit operations. (Bulletin 87-O.)



L-57 Rock Drill

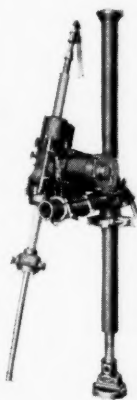
This 57-lb. drill is designed for drilling holes up to 16 feet in depth under average drilling conditions. Its fast drilling in all materials makes it an essential item in all strip pit operations. (Bulletin 87-H.)

Sullivan Detachable Bits

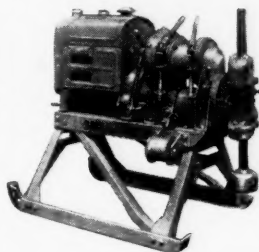
Sullivan manufactures a complete line of detachable rock bits. They have proven their superiority in all types of rocks. (Bulletin 87-G.)



CORE DRILLS

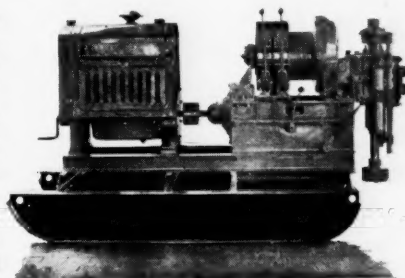


The No. 6 is a one-man core drill for surface or underground mounting in prospect work. It has a capacity rating of 250' with "E" rods and "EX" fittings. Available with a selection of any three spindle speeds up to 1500 R.P.M. The No. 6 is furnished with either electric or Sullivan "Turbinair" motive power. Ask for Bulletin D-25.



The No. 12 core drill has a capacity rating of 750' of "E" rods with "EX" fittings or 600' of "A" rods with "AX" fittings. Available with gasoline, diesel, air or electric motive power. The surface mounting is equipped with

3 speed hoist for pulling rods. Models can be equipped with either screw feed or hydraulic feed swivelhead. Ask for Bulletin D-21.



The No. 22-HD is a direct-coupled unit transmitting power directly through 4 speed transmission gear box to drive gear in drilling head. This eliminates chains and belts and insures steady, smooth power to the bit. The 22-HD is equipped with enclosed clutch on drill, safety throw-out clutch on drive gear and anti-friction bearings. Gasoline, diesel, air or electric drive. The 22-HD has depth rating of 1150' of "E" rods with "EX" fittings. Ask for Bulletin D-28.

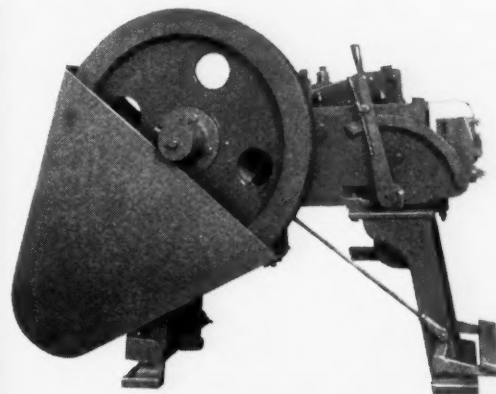
AUTOMATIC CUTTER BIT HEATER

The Sullivan Automatic Cutter Bit Heater assures correct heating of cutting machine bits for sharpening. In this heater only the point of the bit comes in contact with the heat and, consequently, the shank of the bit is not tempered. The heater is equipped with gravity feed and the bits are fed one at a time to the heating chamber. When the bits reach the farther end of the heater, they have attained proper forging heat and can be discharged at will for the sharpening operation.



CUTTER BIT SHARPENER

The use of dull and improperly shaped cutting machine bits imposes the penalties of higher power consumption, undue strain on chain and machine, reduced output and increased maintenance cost. Cutting machine efficiency will increase through the use of uniform bits of proper shape made by the Sullivan Roller Cutter Bit Sharpener. The unit can be furnished with a gear type motor, or with a pulley for belt drive from a shop line shaft or independent motor.



CORE DRILLING SERVICE

By CONTRACT

Mineral prospecting and engineers' sub-surface test-borings for determining suitable locations for dams, bridges, buildings and grout-hole drillings are undertaken on a contract basis. A large stock of various sizes of core drills and equipment maintained in contract service at all times. Highly skilled crews on every job.

Core drill contracting service since 1875.

SULLIVAN MACHINERY COMPANY

EXECUTIVE OFFICES — MICHIGAN CITY, INDIANA

Factories: MICHIGAN CITY, INDIANA; CLAREMONT, NEW HAMPSHIRE; GRANTHAM, ENGLAND

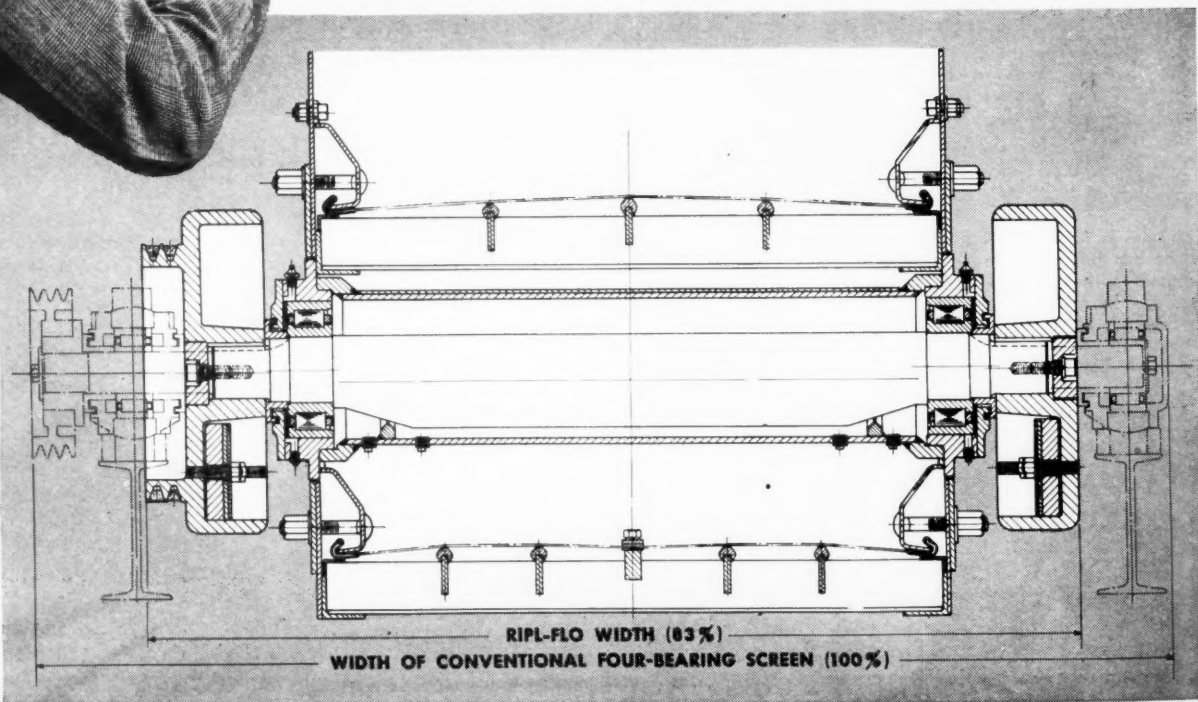
Associated House: CANADIAN SULLIVAN MACHINERY COMPANY, Ltd., DUNDAS, ONTARIO

COAL MINING MACHINES • SCRAPER HAULERS • ROCK LOADERS • HOISTS • CAR PULLERS • AIR COMPRESSORS

ROCK DRILLS • CUTTER BIT SHARPENERS AND HEATERS • CORE DRILLS AND CORE DRILL CONTRACTING

WHY USE 4 BEARINGS

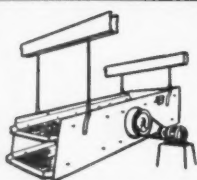
WHEN 2 WILL DO THE JOB?



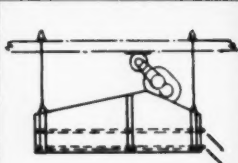
NEW RIPL-FLO CONSTRUCTION eliminates two outer bearings . . . reduces width 17%, weight 36%. This means lower first cost and power consumption, easier installation and accessibility.

Get "All Out" production with

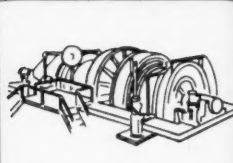
ALLIS-CHALMERS



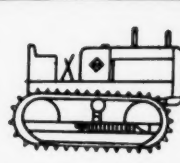
Low-cost, High-capacity Ripl-Flo Screen



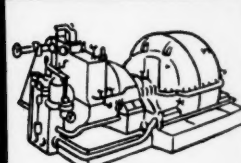
Low-Head Screens for Screening and Dewatering



Mine Hoists with Complete Safety Devices



Crawler Tractors for Hauling and Stripping



Steam Turbines, Power and Electrical Equipment

TWO DOUBLE-DECK RIPL-FLO SCREENS IN a West Virginia tippie receive a feed of 250 tons per hour. Eliminating the two outer bearings reduces width 17%, weight 36%.

New Allis-Chalmers Ripl-Flo Screen . . . with Perfect Circle Throw . . . Gives Top Performance without Disadvantages of Two Outer Bearings. Read this Example of How Allis-Chalmers Cooperative Engineering Helps You Get "All-Out" Production in Your Plant!

Top four-bearing performance *without the disadvantages of the two outer bearings!* That's the secret of the constantly growing demand for the new Allis-Chalmers Ripl-Flo . . . the screen with perfect circle throw!

When the Allis-Chalmers screening engineers designed this remarkable new screen, they eliminated all superfluous parts . . . *reduced the over-all width 17% . . . slashed the weight 36%!* Figure out for yourself what this means to you in lower first cost . . . reduced power consumption . . . ease of installation and accessibility!

Perfect Circle Throw Increases Capacity!

What's more, Ripl-Flo's perfect circle throw transmits vibration evenly to every square inch of the screen

cloth. There is no damping of vibration even under the heaviest loads. And the constant rate of travel over the entire deck gives you maximum capacity and efficiency.

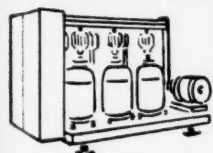
Equally important, the Ripl-Flo Screen has no violent shaking action . . . material is *rolled* over and over . . . degradation is reduced to a minimum. There is *no blinding* . . . even in screening fine, damp material!

"All-Out" Production With Cooperative Engineering!

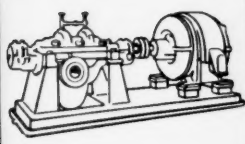
Whenever a production problem comes up in your plant, call on Allis-Chalmers Cooperative Engineering to help you work it out. Let our trained engineers help you adapt existing equipment to the peak demands of the War Program.

Working with your own staff, they put their broad experience at your disposal . . . help give you the "all-out" production so necessary for Victory! For complete information, call the district office near you. Or write direct to Allis-Chalmers, Milwaukee. A 1491C

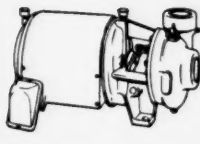
COOPERATIVE ENGINEERING



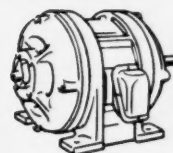
Excitron Rectifier for Mine Haulage Systems



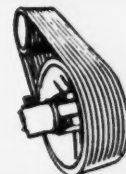
Mine Pumps for High Heads and Capacities



Electrifugal Pump — Compact, Low-cost



Lo-Maintenance Motors for Surface Installations



Texrope V-Belt Drives — Positive, Flexible, Compact

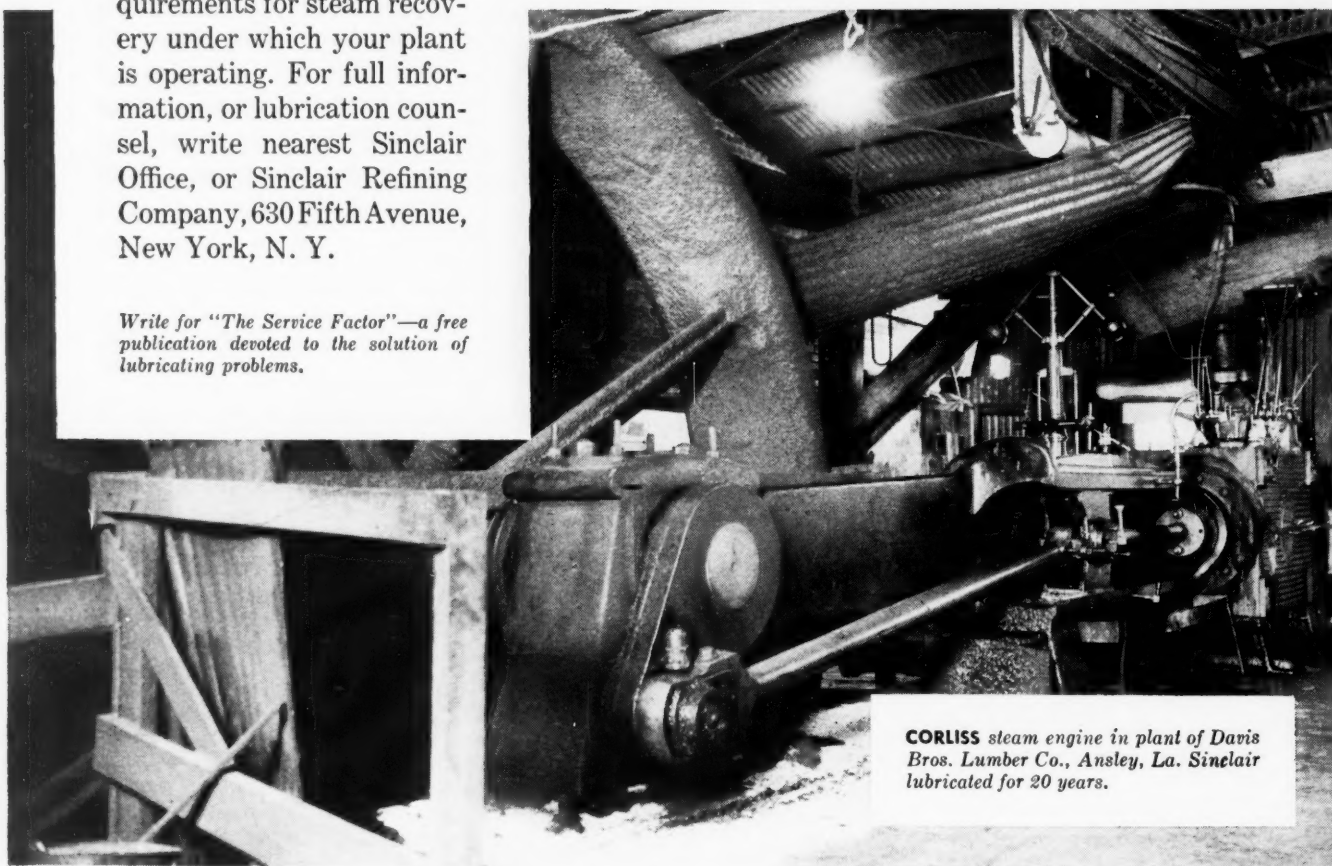
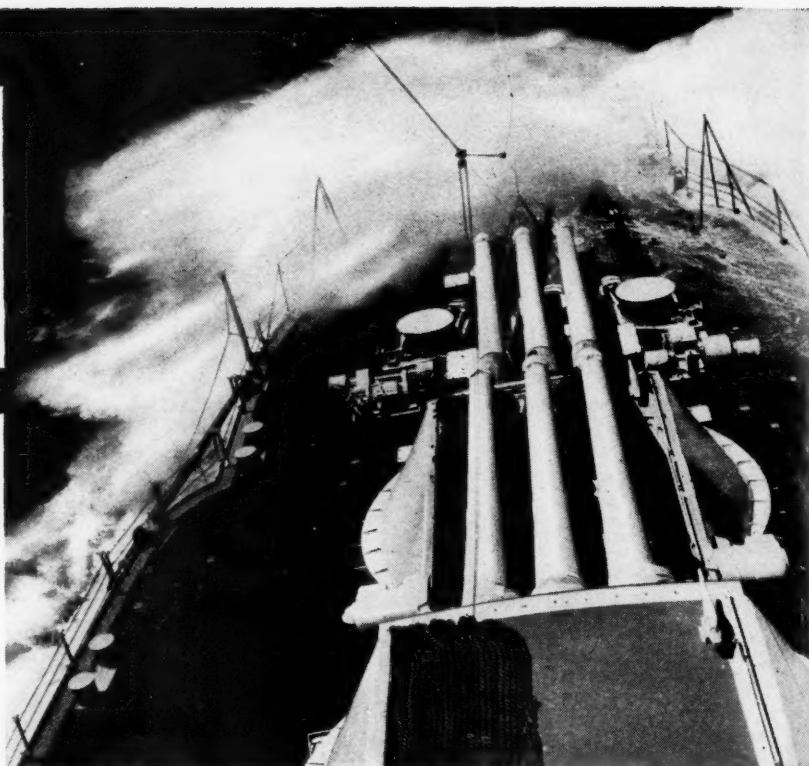
WAR SCHEDULES

suffer if power house lubrication is inadequate. For STEAM ENGINES there are . . .

. . . SINCLAIR STEAM CYLINDER and VALVE OILS

giving efficient lubrication under normal top loads and today's emergency overloads. These lubricants meet any combination of pressures, temperatures, moisture conditions and requirements for steam recovery under which your plant is operating. For full information, or lubrication counsel, write nearest Sinclair Office, or Sinclair Refining Company, 630 Fifth Avenue, New York, N. Y.

Write for "The Service Factor"—a free publication devoted to the solution of lubricating problems.



CORLISS steam engine in plant of Davis Bros. Lumber Co., Ansley, La. Sinclair lubricated for 20 years.

SINCLAIR INDUSTRIAL OILS

SINCLAIR REFINING COMPANY (Inc.)

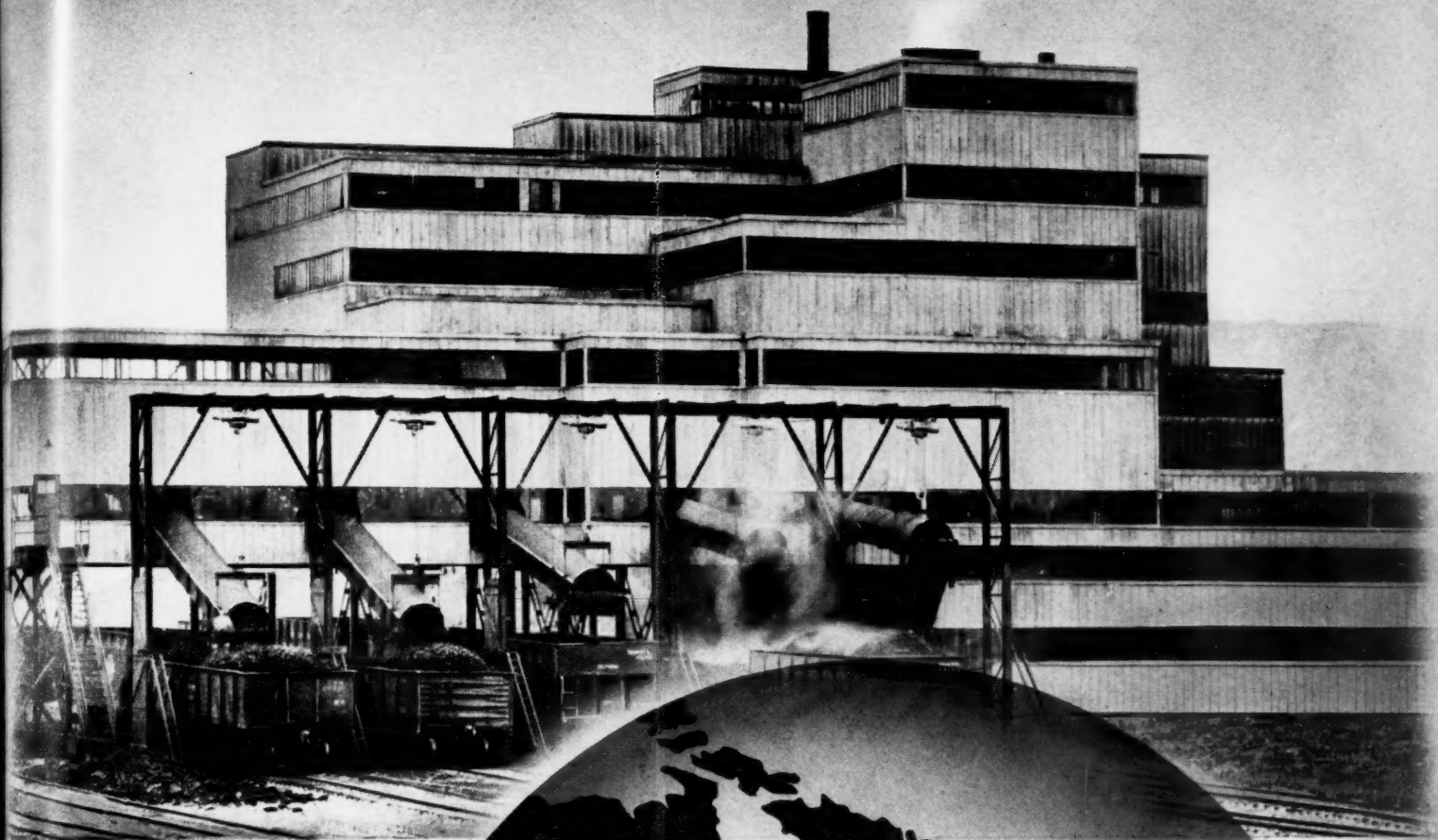
2540 WEST CERMAK ROAD
CHICAGO

10 WEST 51ST STREET
NEW YORK CITY

RIALTO BLDG.
KANSAS CITY

573 WEST PEACHTREE STREET
ATLANTA

FAIR BUILDING
FT. WORTH



M McNALLY PITTSBURG

covers the western hemisphere!

from Alaska to the southernmost state in Brazil

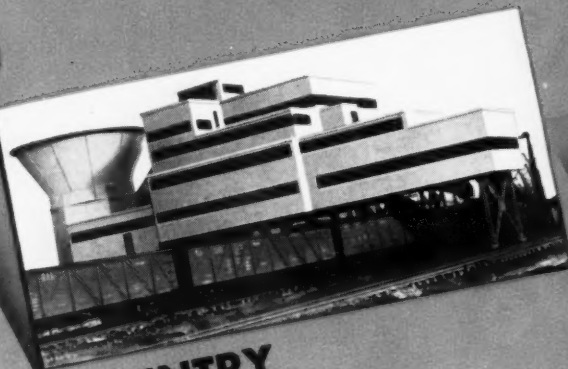
● Every coal producing area in the Western Hemisphere is dotted with McNally Pittsburg coal cleaning plants and coal preparation equipment. The blue dots on the map indicate coal cleaning plants . . . the red dots, coal tipples and preparation equipment. Complete coverage, such as this, is indicative of the thoroughness with which the McNally Pittsburg engineers solve each individual problem. It is a tribute also to the efficiency of the equipment because many of these plants represent multiple installations, over a period of years, of large companies with more than one mine. The first McNally Pittsburg installation proves so highly efficient that it is followed by others.

● Coal operators everywhere recognize the importance of McNally Pittsburg complete three way service

embracing design, manufacture, and erection . . . from blue print to plant in operation. They expect and get prompt action and undivided responsibility. They realize, too, the advantages of working with coal engineering specialists who devote 100% of their thinking to coal preparation and who have just about solved every coal preparation problem that exists, whether in the coal fields of the United States or in the more distant coal fields of South America.

● McNally Pittsburg engineers know how to help you produce the special sizes needed by your customers, and which are most profitable to you.

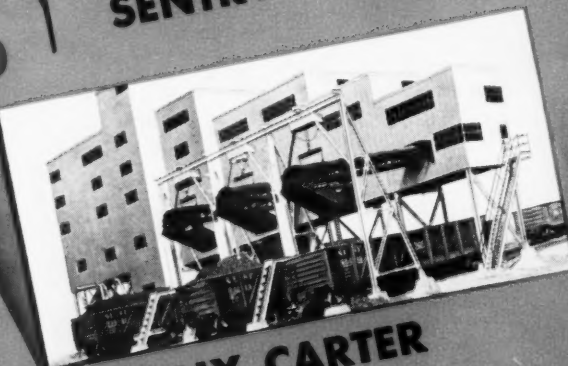
● Without obligation on your part, a McNally Pittsburg engineer will survey your preparation facilities and make recommendations.



SENTRY



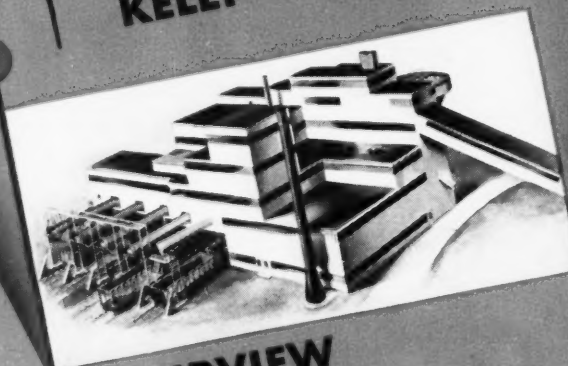
C. A. D. E. M. BRAZIL



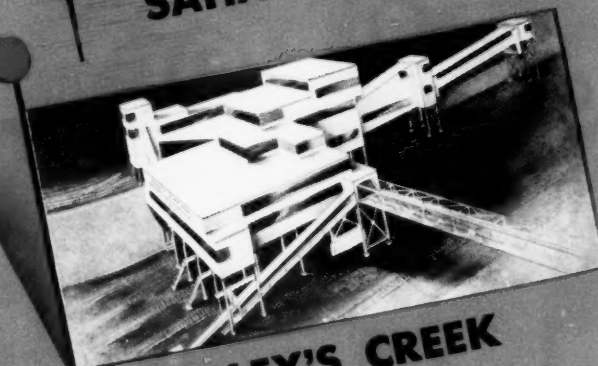
KELLY-CARTER



SAHARA



FAIRVIEW



KELLEY'S CREEK

NE

Our
now av
illustra
McNally
Washer
line of
illustra
head w

LEC

The
approx
tions h
Coal
Autom
McNally
Tipp

DOMINION of
CANADA

U. S. A.

MEXICO

CENTRAL AMERICA

SOUTH AMERICA



NEW CATALOG

Our newest 48-page catalog is now available. In it you will find illustrations, specifications, and data on all of the McNally Pittsburg equipment including McNally-Rheo Washeries, McNally-Vissac Dryers, and the complete line of preparation equipment, a few items of which are illustrated on the next page. A request on your letterhead will bring it without obligation.

LEGEND

The dots in colors indicate the type of equipment at approximate locations on the map where the installations have been made.

- ◻ Coal cleaning equipment including McNally-Norton Automatic Washeries, McNally-Rheo Washeries, McNally-Menzies Cone Separators, Battelle Launderers.
- ◻ Tipples and miscellaneous coal preparation equipment.

MAJOR INSTALLATIONS:

81 Washeries in which there are 137 cleaning units. (In most cases these installations also include complete tipples.)

52 Complete tipples and preparation plants.

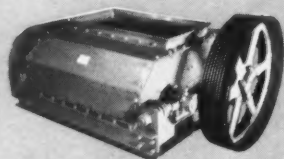
8 McNally-Vissac Thermal Dryer installations using 19 units.

Total wet cleaning, 20,805 tph.

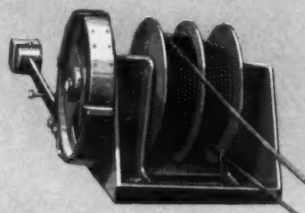
M McNALLY PITTSBURG MFG. CORP.

**CUSTOM BUILT
PREPARATION PLANTS**

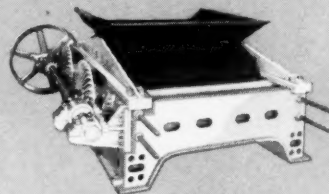
A few of the important units in this complete line of **COAL PREPARATION EQUIPMENT**



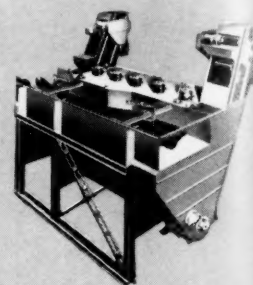
Stoker Coal Crushers



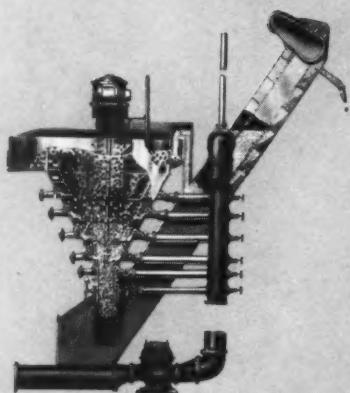
Car Retarders



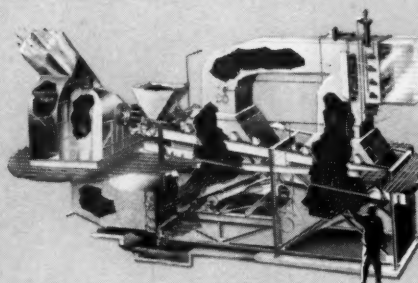
Double Roll Crushers



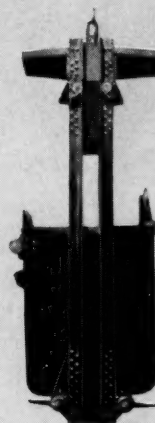
McNally-Norton Automatic Washers



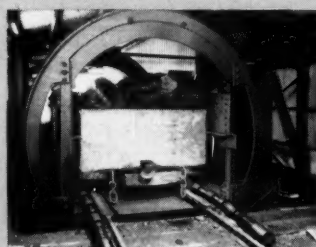
McNally-Menzies Cone Separators



McNally-Vissac Dryers



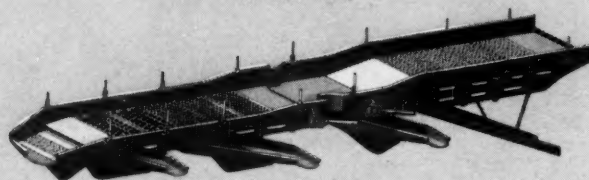
Skip Dumps



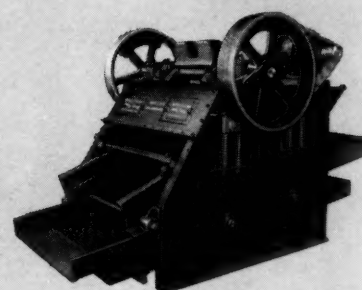
Rotary Dumps



Motorized Gate Valves



Shaker Screens



Pick Breakers

McNALLY PITTSBURG MFG. CORP.

General Sales Office
307 N. Michigan Ave., Chicago, Ill.

General Office and Works, Pittsburg, Kansas

Eastern Sales Office
Koppers Bldg., Pittsburgh, Pa.

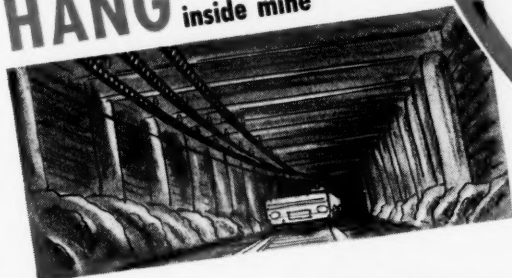
LAY directly in
the ground



PULL into
conduit

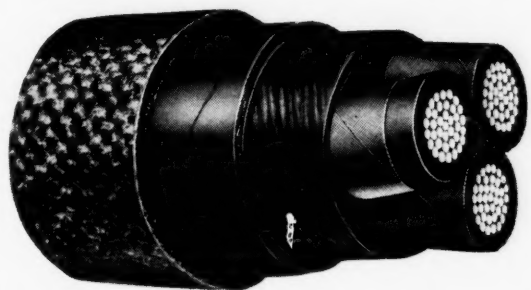


HANG on insulators
inside mine



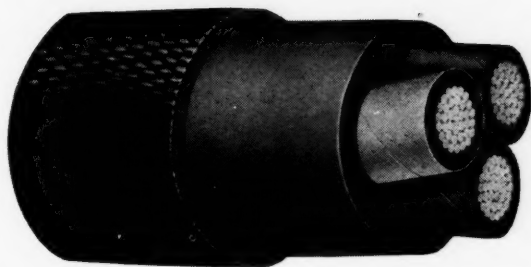
HAZARD ARMORTITE and HAZASHEATH POWER CABLES FOR TRANSMISSION and DISTRIBUTION

Quick to Install . . . Lasting in Service . . . Moderate in Cost



Good Facts to Know About ARMORTITE

All these precautions against damage from moisture or injury are taken in the construction of Armortite Cable — asphalted jute cushions . . . a plastic sealing compound . . . non-metallic, tough, leather-like armor tapes . . . and a durable, loom-woven spiral-weave jacket. Armortite Cables are much lighter than steel armored cables — thus easier to handle and install. (They also save steel for other war uses.)



Good Facts to Know About HAZASHEATH

A tough, elastic, moisture-resisting rubber jacket . . . plus ample cushioning gives Hazasheath Cable the protection needed to assure long, trouble-free life in mine service. Hazasheath is easy to splice and connect . . . speeds installation.

HAZARD INSULATED WIRE WORKS
DIVISION OF THE OKONITE COMPANY
Works: Wilkes-Barre, Pennsylvania
Offices in Principal Cities



HAZARD
Electrical Wires and Cables for Mines



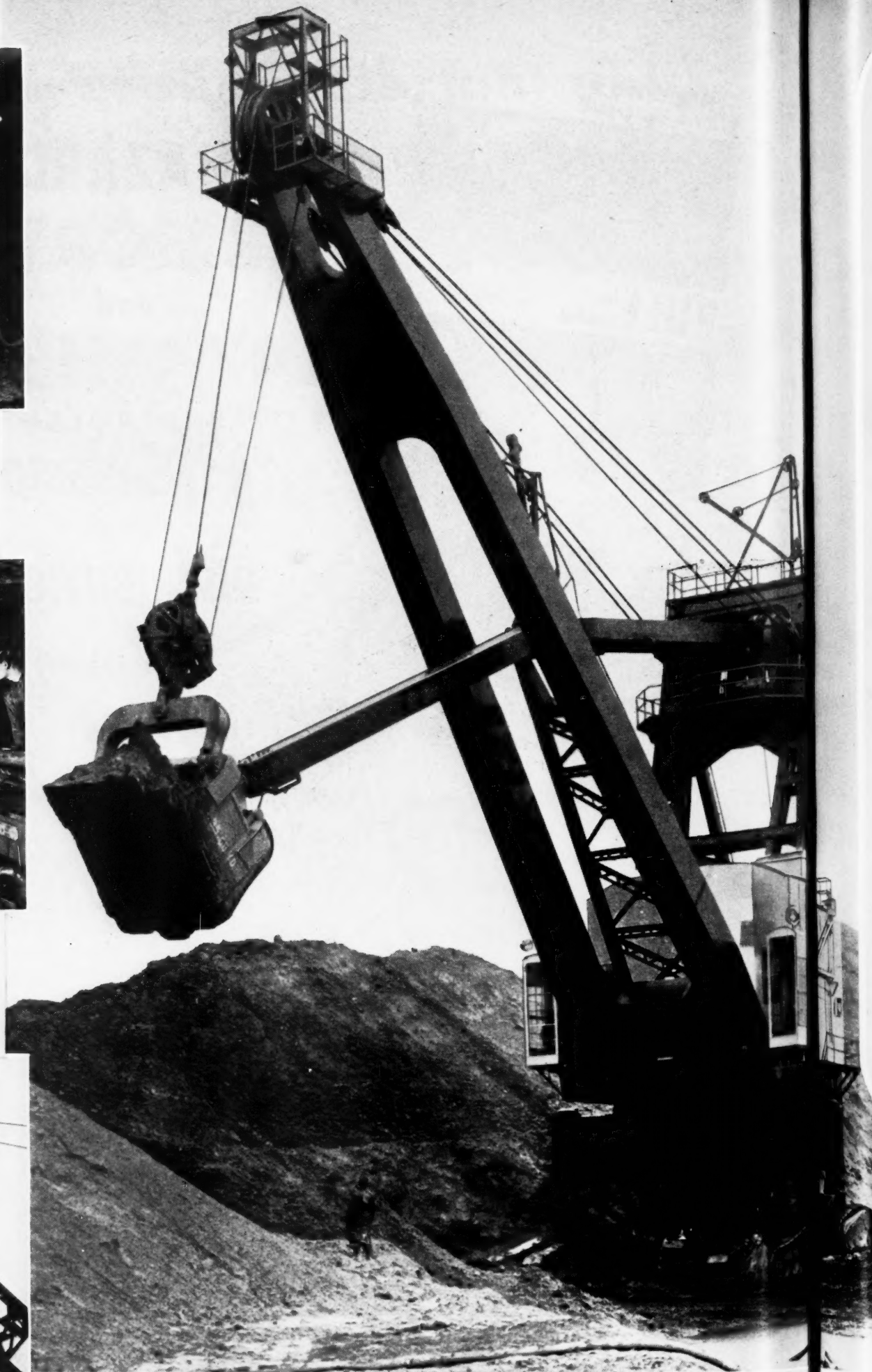
On shovels, wire rope is required to bend repeatedly over drums and sheaves and is subjected to shock loads, vibration and wear. Tiger Brand Excellay Preformed Wire Rope, because of its strength and superior fatigue-resisting properties will improve service on this class of equipment.



Most of the mechanized equipment used for coal mining is small and compact. Ropes are handled frequently, overwind on drums, bend around small sheaves and are subject to excessive loads under adverse conditions. In this severe duty Tiger Brand Excellay Preformed Wire Rope has proved its superiority over standard wire rope.



On mine shafts and slopes, conditions vary widely with respect to relative sheave sizes, overwinding, wear, etc. Vibration, fatigue from bending, external wear and acceleration stresses are always present. Under these conditions the ability of Tiger Brand Wire Rope to withstand constant bending, wear and vibration is important in prolonging rope life and insuring continuous operation.



UNITED

S

Indispensable to America's war effort...

GOOD WIRE ROPE

Take care of what you have . . . use it properly . . . make it last longer

WITHDRAW wire rope from the mechanized equipment used in mines, and production vital to America would bog down to a virtual standstill. That's how important wire rope is in getting out tonnage.

War-time needs make it imperative that mine production be stepped-up and maintained at top speed and efficiency. In American Tiger Brand Wire Rope we offer you the quality of rope you *must* have if you expect

to meet the demands of war-time operation.

To help you get the most out of Tiger Brand Wire Rope, we are prepared to help you select the right type of rope that will best suit your equipment and will gladly show you how to make it *last* under hard, continuous duty. Remember — every wire rope allowed to wear out prematurely through neglect or improper use is an unnecessary loss to the nation.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

For Anthracite Service: Miners Bank Building, Wilkes-Barre, Pa.

COLUMBIA STEEL COMPANY

San Francisco

United States Steel Export Company, New York



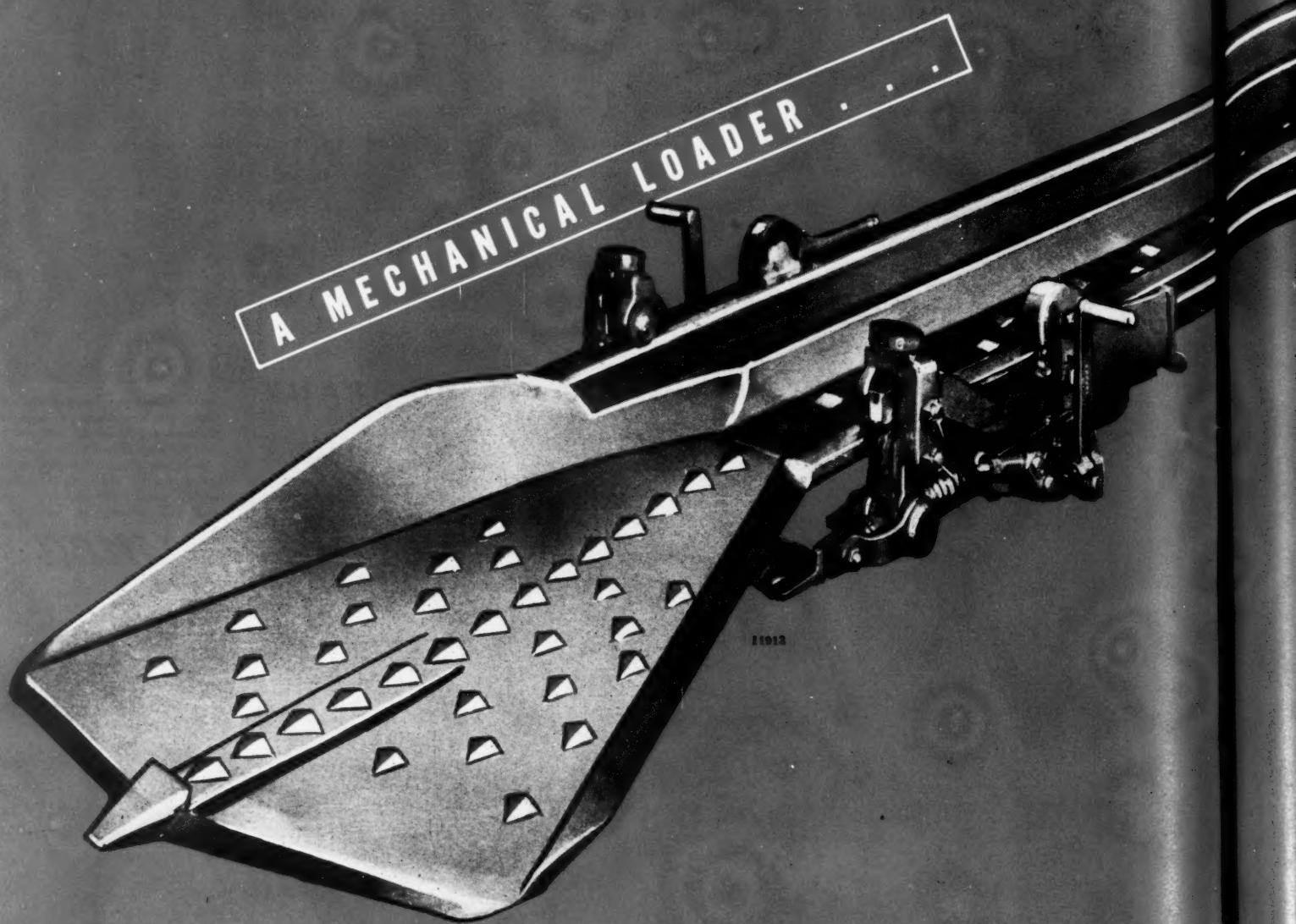
S T A T E S

S T E E L

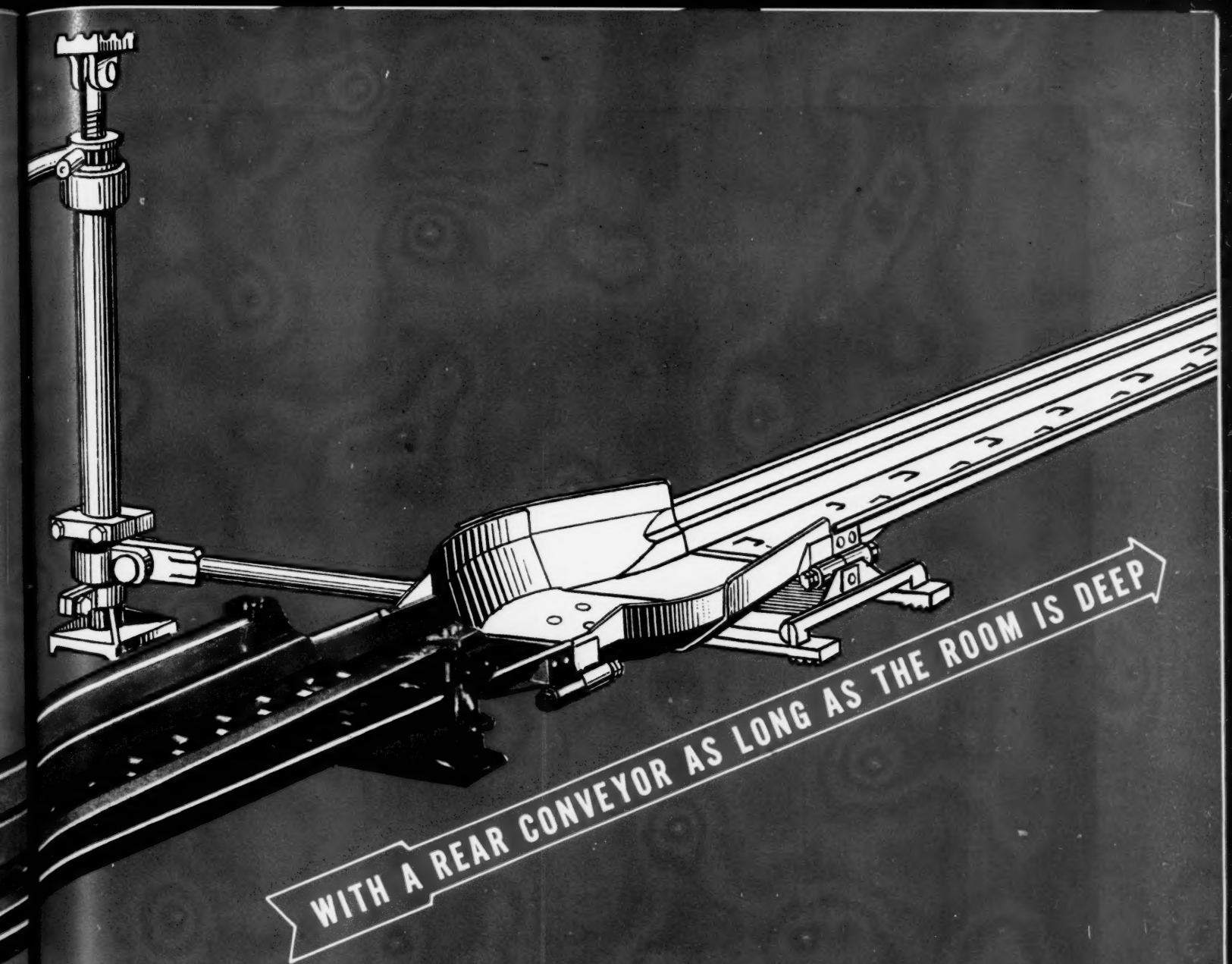
THE GOODMAN

Automatic Duckbill

A MECHANICAL LOADER . . .



GOODMAN MANUFACTURING COMPANY



HALSTED STREET AT 48TH • CHICAGO, ILLINOIS



PLEDGED to all-out aid to America's fighting forces, NORMA-HOFFMANN is devoting all its resources and its 31-years' experience, to the production of PRECISION BEARINGS for the Army, Navy and Air Corps, and for manufacturers of armament and equipment.

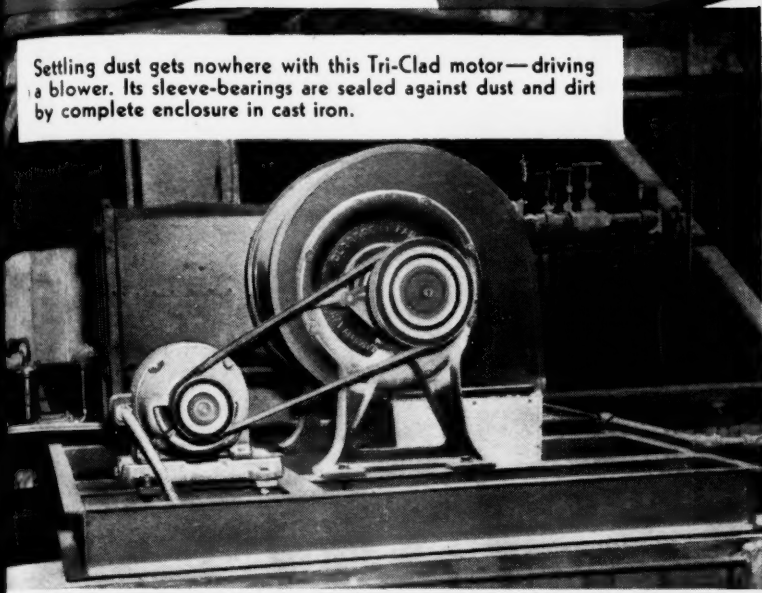
NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U. S. A.
BALL, ROLLER AND THRUST BEARINGS • FOUNDED 1911

**YOU TOO
CAN SAVE**

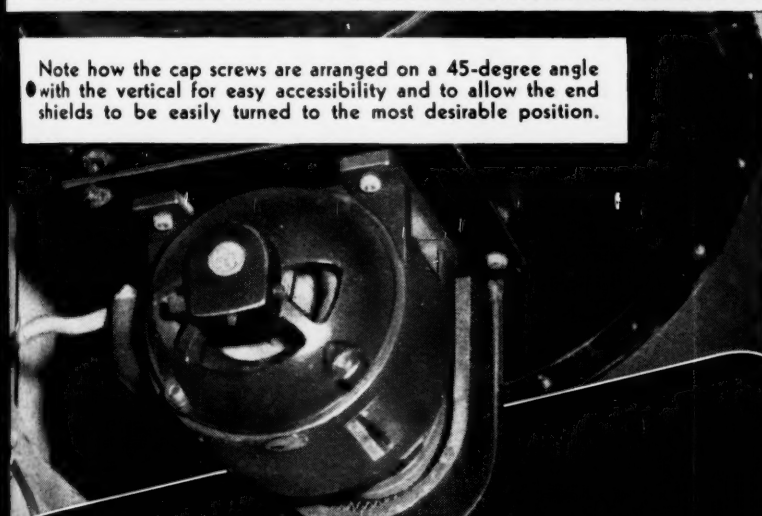
TIME...

TROUBLE

Settling dust gets nowhere with this Tri-Clad motor—driving a blower. Its sleeve-bearings are sealed against dust and dirt by complete enclosure in cast iron.



Note how the cap screws are arranged on a 45-degree angle with the vertical for easy accessibility and to allow the end shields to be easily turned to the most desirable position.



SPECIFY

TRI CLAD MOTORS

1. Extra Protection AGAINST PHYSICAL DAMAGE
2. Extra Protection AGAINST ELECTRICAL BREAKDOWN
3. Extra Protection AGAINST OPERATING WEAR

Tri-Clad motors are now available up to 100 hp in standard, open construction, and in a wide range of other types and ratings. Ask your G-E representative for complete details, or write General Electric, Schenectady, N.Y.

... by using

TRI CLAD MOTORS

REG. U.S. PAT. OFF.

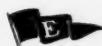
on your FANS and BLOWERS

MANY fans and blowers must be installed high above the factory floor, or in awkward locations where working space is limited. Here's where the Tri-Clad motor becomes a real time-saving aid to hard-pressed installation crews hurrying to get vital equipment into production.

Tri-Clad motors are a cinch to install because of their light weight and compactness. Also, their shape facilitates ease of handling, by hand or with slings. Four-position end shields permit flexibility in mounting, and the roomy four-position conduit box affords unrestricted working space. All leads are permanently identified. In addition, Tri-Clad features facilitate lubrication and other routine maintenance.

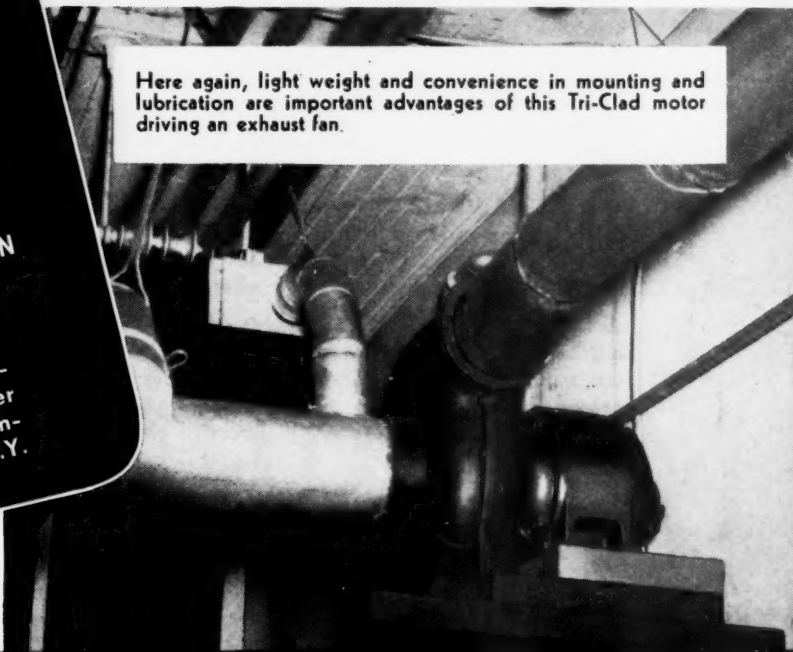
Specify Tri-Clad motors on your next order. You, too, will find that they save precious man-hours when you're installing equipment essential to the war program.

BUILT FOR PROTECTION FIRST . . . TO LAST!



General Electric and its employees are proud of the Navy award of Excellence made to its Erie Works for the manufacture of naval ordnance.

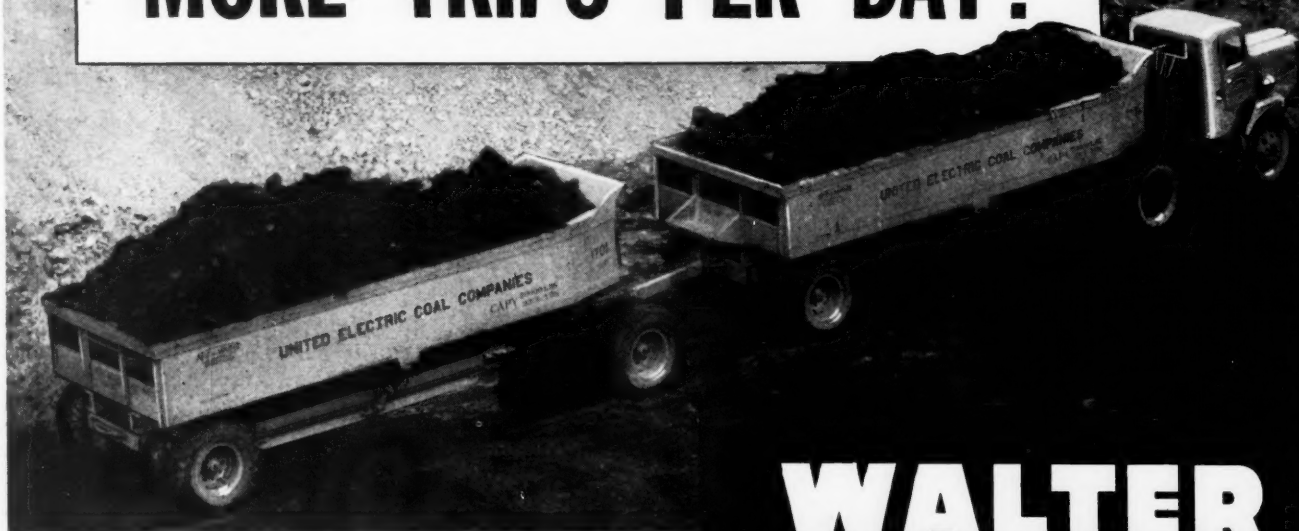
Here again, light weight and convenience in mounting and lubrication are important advantages of this Tri-Clad motor driving an exhaust fan.



GENERAL  ELECTRIC

750-117-8058

**MORE TONS PER TRIP!
MORE TRIPS PER DAY!**



**WALTER
TRACTOR TRUCKS**
with
4-POINT POSITIVE DRIVE

The amount of coal you can haul from pit to tipple governs the output of your strip mine. Look to your transportation set-up for the key to increased tonnage, as well as lower cost per ton.

Consider these advantages of Walter Tractor Trucks. They are specially engineered trucks, having the exclusive 4-Point positive Drive—an advanced four-wheel drive with positive traction in each wheel. Patented Automatic Lock Differentials proportion the torque to each wheel according to its traction, so that on soft, wet or slippery surfaces, wheels with the most traction always get the most torque. This assures unfailing power and traction to haul huge loads (up to 55 tons as shown above) in any weather, under the worst running conditions, up the steepest grades. Walter Tractor Trucks have enormous reserve power and ruggedness to withstand maximum loading and running—yet they are easy to handle and maneuver in extremely small space. Write for full details.

● **AUTOMATIC LOCK DIFFERENTIALS** proportion the torque to each wheel according to its requirements at any instant.

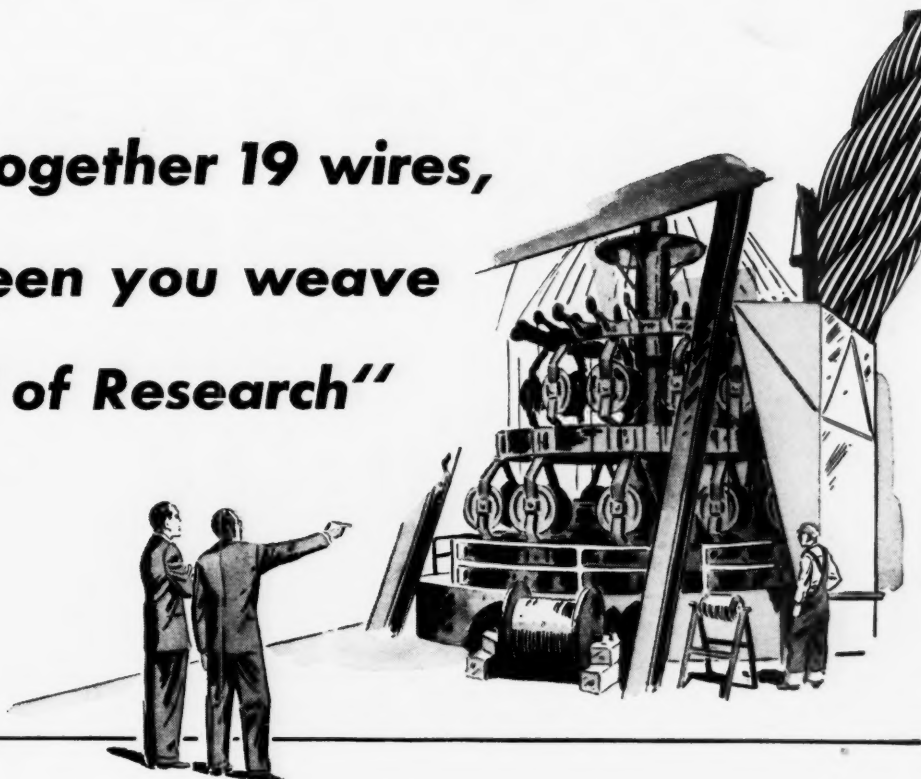
● **SUSPENDED DOUBLE REDUCTION DRIVE** reduces unsprung weight, gives higher ground clearance, saves wear and tear on truck and tires.

● **SCIENTIFICALLY CORRECT WEIGHT DISTRIBUTION** with balanced cab forward, short wheelbase, low chassis height.

● **14 to 1 RANGE TRANSMISSION** with 6 speeds forward, 2 reverse, fast high gear, powerful low gear and proper intermediate ratios for all operating conditions. Single lever control.

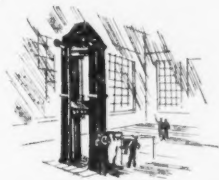
WALTER MOTOR TRUCK CO.
1001-19 IRVING AVENUE, RIDGEWOOD, QUEENS, L. I., N. Y.

**"You strand together 19 wires,
and in between you weave
the thread of Research"**



**Like the research that's responsible
for this giant strander**

"Many a job calls for 6 x 19 "Blue Center" Steel Wire Rope, but for those that don't, Roebling Research is ready with specialized facilities and materials. This giant strander, for example, can take as many as 46 tough steel wires, and accurately lay them into strand for pliable, high-strength, large diameter ropes, such as are used on mammoth dredges...



How strong is such a strand? If we want to know, this "tower of torture" will tell us. Another of the long arms of Roebling Research, it can pull apart a 4" wire rope to find its ultimate breaking strength. It also indicates how the rope

will behave under your conditions and your loads...



But of course you know that a study of wire rope quality must cover more than breaking strength alone. That is why Roebling Research created the world's largest, most highly developed fatigue testing machine for wire rope—a giant laboratory in itself. In its 75-foot length it simulates many conditions that "Blue Center" Steel Wire Rope meets in the field, lets Roebling Research men study each condition carefully...



Thus the strong but invisible thread of Research is woven into every inch of Roebling "Blue Center" Steel Wire Rope. Giving it the extra stamina to meet the unusual load as well as the routine one...to give extra service where extra service is called for. Bringing it to the high standards it must pass, to carry the Roebling Trademark..."



Roebling Research, Roebling Engineering, Roebling Plant Facilities and broad Experience... each adds its part to the extra values in Roebling "Blue Center" Rope. Each helps it meet conditions unfailingly, wherever wire rope has a routine or unusual job to do.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY
Branches and Warehouses in Principal Cities



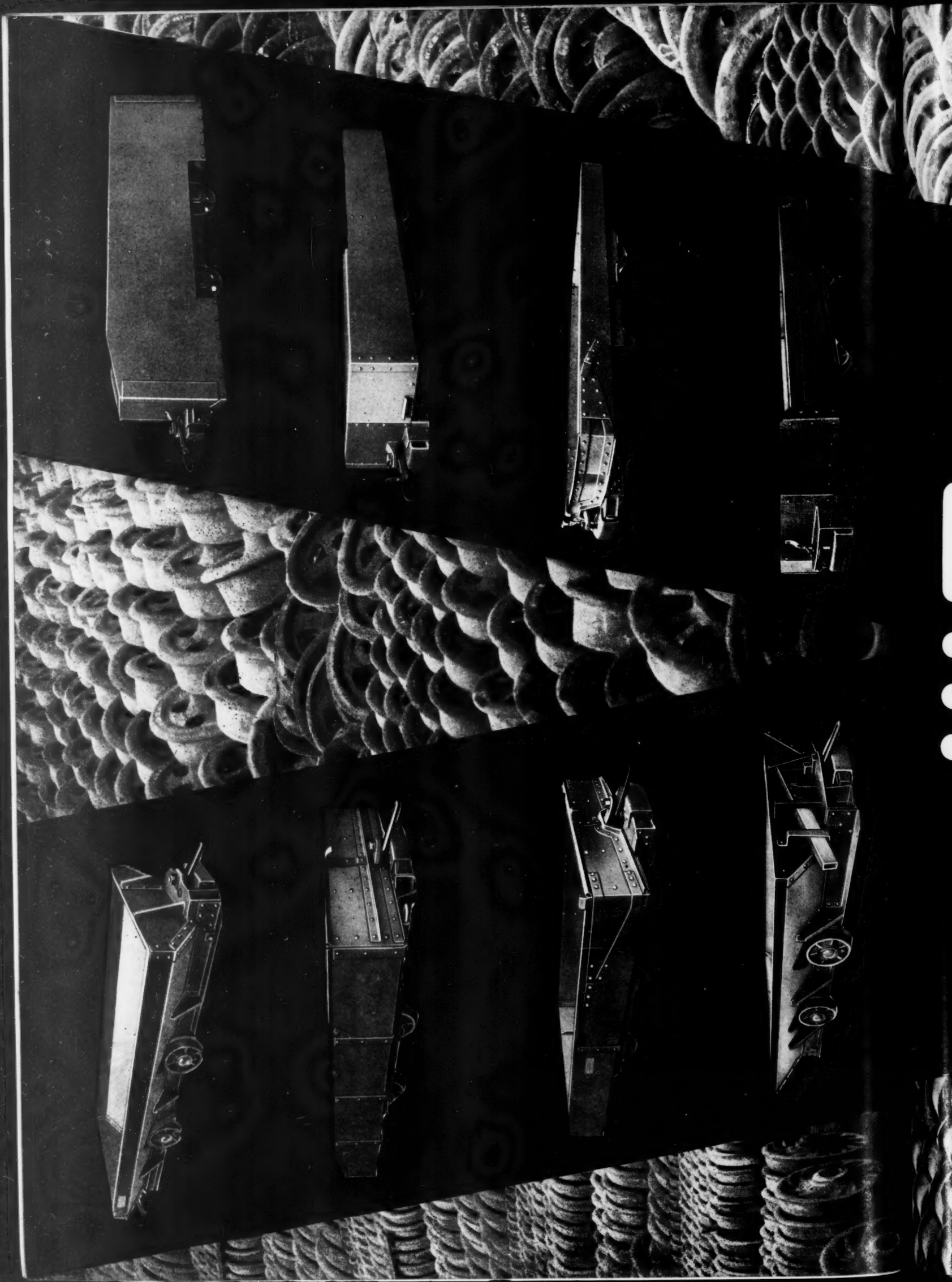
— THAT'S THE ONLY WAY TO MAKE —

ROEBLING

"Blue Center"

STEEL WIRE ROPE

PREFORMED OR NON-PREFORMED





if we keep 'em Rolling

We manufacture for the mining industry complete cars, wheels, axles, complete trucks, bumpers, electrically welded end sill construction with spring bumpers, and parts, just as quickly as materials can be obtained . . . — If you need parts or complete cars, place your order now . . . — It makes no difference where your mine is located, A.C.F. will serve you in proper turn. The question is delivery of materials . . . —

AMERICAN CAR AND FOUNDRY COMPANY

New York • St. Louis • Chicago • Philadelphia • Berwick, Pa.
Pittsburgh • Cleveland • Huntington, W. Va.

A.C.F.



*Eye Accidents can Inflate your Costs
from 1¢ to 5¢ a ton ...*

ALL YOUR WORKERS NEED AO GOGGLES

Properties that operate without adequate eye protection pay a high price for doing so. They pay with: lowered company morale, slowed up production and high cost-per-ton. In fact, even *one* serious eye accident can boost your costs as much as 5¢ a ton.

In model mines, where costs are low, all workers

wear goggles. American Optical Company offers you a line of goggles—eye protection that is cool, comfortable and equipped with Super Armorplate Lenses, *resistant to impact*.

Call in your M. S. A. representative. Ask him to show you the Ful-Vue—and the other AO Goggles.

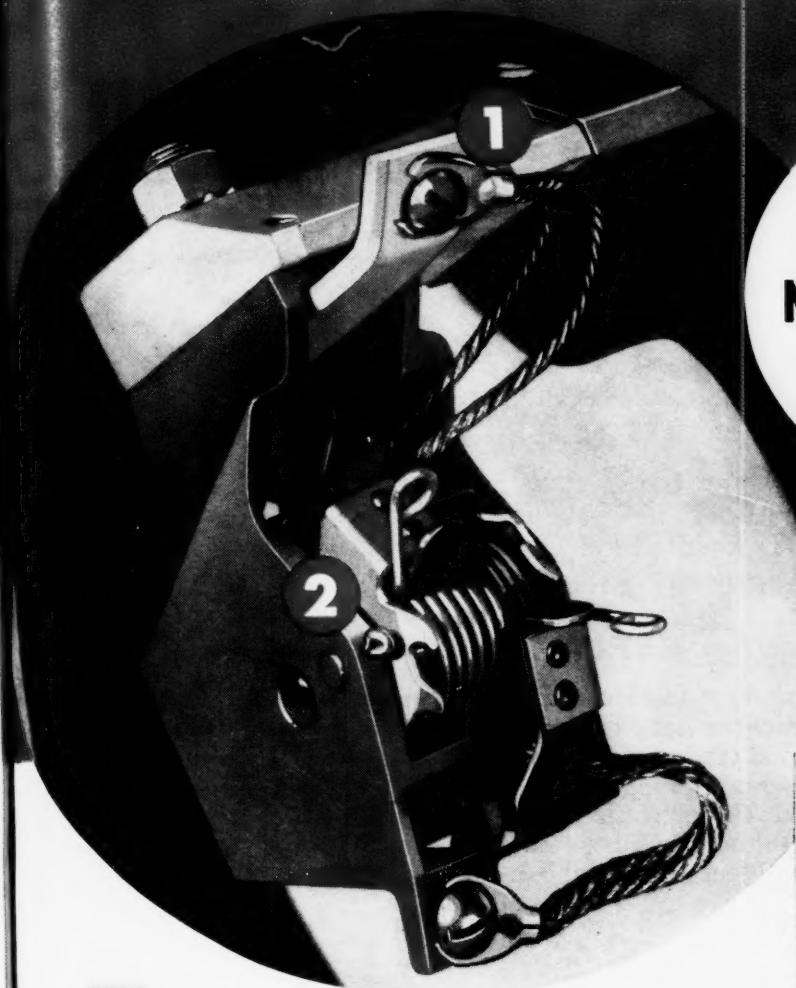
THE American  Optical COMPANY
SOUTHBRIDGE MASSACHUSETTS



many
motor
conta
struct
motor
of the
vital
Our a
of the
out—
fill th
Comp
glad
the m
motor
Gener

TAKE A LOOK

At This Brush Rigging



It's ONE REASON Why Our New D-c Motors Are So Dependable, and So Economical

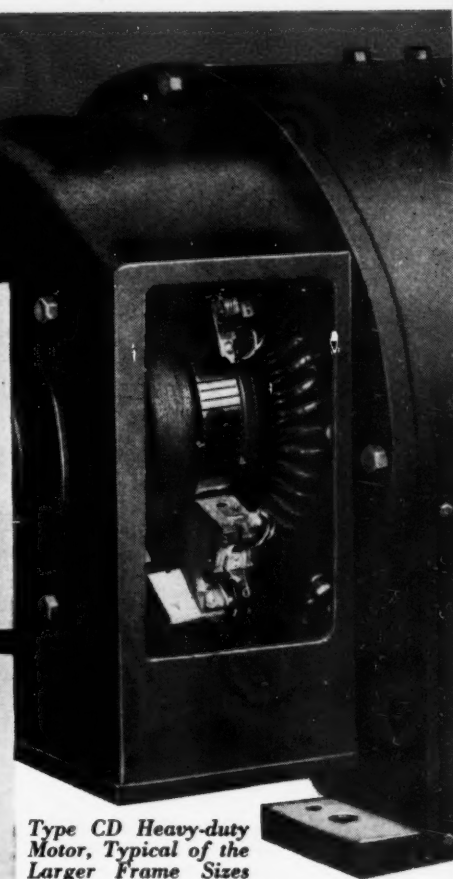
THIS improved brush rigging is but one of the many new features of General Electric direct-current motors. Stable operation is assured by the positive contact of the simple, compensating-action holder construction. Steady, economical performance of these motors year in and year out is possible largely because of the rigid, sturdy, and accurate assembly of this vital part.

Our attention to design detail, together with the use of the latest methods and materials—from the inside out—gives you d-c motors qualified better than ever to fill the needs of industry.

Competent engineers in the nearest G-E office will be glad to point out the many advantages you get from the new and improved features of this outstanding motor. Call them, or send for bulletin GEA-1868B. General Electric, Schenectady, N. Y.

1 Accurately fitted, corrosion-resistant brush-holder studs are held rigidly in position in milled slots by simple and easily accessible flat plate clamps. Studs are insulated from the yoke by a hot-formed, stud-shaped insulating sleeve that is highly arc-resistant—that does not oxidize or carbonize—and is resistant to any deterioration.

2 Smooth operation and long life of brushes and commutator are possible because a unique, self-compensating, adjustable spring pressure always maintains good brush contact on commutator. If one brush tends to move away from the commutator, additional pressure is exerted on its companion, thus assuring excellent commutation.



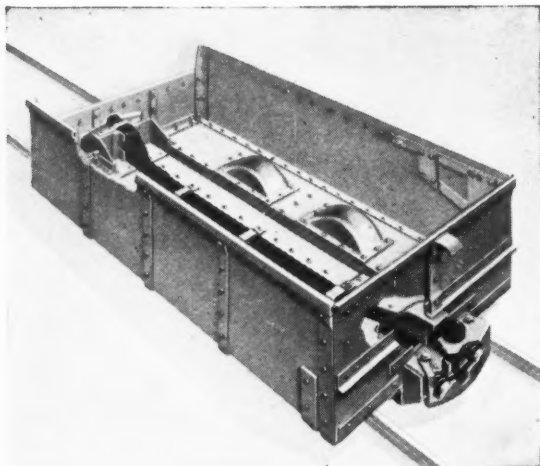
Type CD Heavy-duty Motor, Typical of the Larger Frame Sizes



GENERAL ELECTRIC

Bethlehem Heavy-Duty Track Equipment Solves Problem

at Glen Burn



HERE'S A NEW MINE CAR

Bethlehem's new mine car with a floating draw-bar has what it takes to withstand today's conditions.

Pull on one end of the car is transmitted through the floating draw-bar to sturdy buffer springs at the other, eliminating the shock of

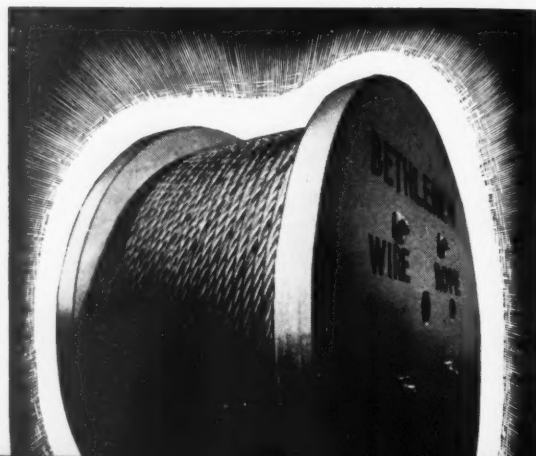
sudden jerks and removing a hauling load from the front end. Thus the ends are not subject to being pulled off in service. Dual draft-springs are located outside the car body for protection from corrosive action of the coal.



ROOFING AND SIDING FOR EVERY MINE USE

For head frame, breaker building and store house—wherever you need steel roofing and siding—you can find exactly the type you need in the complete Bethlehem line. Bethlehem Galvanized Steel Roofing is avail-

able in seven styles—1¼- and 2½-inch Corrugated Sheets, 2-, 3- and 5-V-Crimp Sheets, and Stormproof and Weatherproof Sheets. Both roofing and siding are made in a wide range of sizes and gages



USE FORM-SET (PREFORMED) WIRE ROPE

... and use it correctly. Preformed wire rope will stand up better than ordinary wire rope on most jobs, but proper use and care will make it last even longer. These rules must always be observed:

Choose the correct rope for the job.

Be sure that sheave grooves are of the proper size for the rope being used. Replace or re-

pair sheaves with worn grooves. Keep all wire rope lubricated.

Your Bethlehem Wire Rope distributor can help you to get the maximum service from wire rope. He carries in stock a complete line of Bethlehem Wire Rope. Bethlehem's wire-rope engineers will gladly recommend the proper ropes for your equipment and the best way to use them for longest life.



Here's a layout that solved a lot of problems, and will keep them solved for years to come. It's at the Glen Burn Mine at Shamokin, Pa., and it's equipped throughout with Bethlehem Heavy-Duty Track Material.

Because the layout is exposed to severe weather and bad drainage, ordinary wooden ties quickly rotted out. To offset this, it was decided to replace with pressure-creosoted ties throughout.

Rail in the layout, while old, was good for several years at least. Desirous of conserving steel, the operators decided to use the old rail. But that meant spike-killing the ties and exposing them to rot when the time came to replace the rail.

The problem was, therefore, how to take advantage of treated ties while using the old rail, without spoiling the ties within a few years. The scope of operations at the mine, which anticipates at least a hundred years of production, made initial expense a secondary consideration.

The solution was found in the use of an Ar-moored tie, consisting of a Bethlehem No. 6 Keystone Steel Tie bolted to a pressure-creosoted wood base. The rail is clipped securely in place on the steel tie, eliminating spikes and completely solving the replacement problem.

Other Bethlehem Heavy-Duty Track Equipment used in the new layout included Switches, Parallel-Throw Switch Stands, and Special Switch Ties. Incidentally, the twenty-five turnouts in the complete job were pre-fabricated by Bethlehem for faster installation and better alignment.

Mine



These two photographs show the layout as it was originally and as it appeared after the new ties had been installed. The small picture at top of page shows the original condition; note the unsatisfactory alignment. The larger photograph, at the left, was taken from the same position after replacement of the old ties with Bethlehem Heavy-Duty Ties on wood bases.



AN ACKNOWLEDGEMENT



These things have come to us during the past forty years:

- . . . more than fifteen million hours of work
- . . . wages and salaries providing livelihood for more than two hundred families
- . . . the satisfaction which comes with the production of useful things
- . . . a measure of successful progress
- . . . a share in making a vital product available to many industries and to many people
- . . . an opportunity to contribute to the National Wealth and the American Way

They have come to us because the COAL INDUSTRY has had need of the things we can make and the things we can do.

IT IS A GREAT INDUSTRY . . . RESPECT IT



KANAWHA MANUFACTURING COMPANY

CHARLESTON, W. VA.

1902 • *Fortieth Year* • 1942



Cooperating with Dr. Nelson's WPB Branch, we suggest:

MANY COAL MINES vital to our "all out" war program now face double or triple shifting for the duration. Increased production and extraction mean increased dewatering... and mine after mine has now learned that the word POMONA spells lower cost dewatering with maximum efficiency and dependability—even where grueling abrasion and corrosive mine waters try to sabotage your vitally important dewatering system.

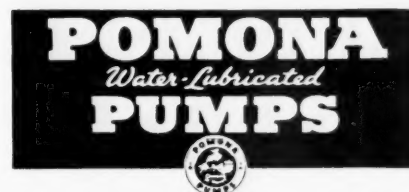
But—other essential war industries also use Pomona Pumps for the same good reasons, and are asking for

more and more of them day after day. Therefore, complying with the War Production Board's timely message to the coal industry this month, we urge coal operators to let us know promptly what their estimated POMONA pumping needs will be for the balance of this year and for 1943.

You will thus be protecting yourselves and us and Uncle Sam's vital war coal needs to mutual advantage.

Remember too, Pomona hydraulic engineers offer you a wealth of information and technical assistance in work-

ing out any unusual applications, special construction or dewatering problems you are facing. Time is short. Write us now... before you forget!



POMONA PUMP CO., 120 Broadway, New York City
Plants located at 4301 South Spring Avenue, St. Louis,
Missouri, and 206 Commercial Street, Pomona, California

**Whatever Your Water Moving
Job—Pomonas Will Do the Job
Better and Faster—For Less!**

BOOST WAR PRODUCTION with



**Eliminates Loading Delays . . . Permits Faster
Hauling in Safety . . . Quickly Saves
Its Cost in Reduced Maintenance**

More efficient haulage is one way to step up mine production for the present emergency. A noteworthy helper toward this objective is the NEW Westinghouse Air Brake Company's, Hydraulic Brake for small locomotives.

It Speeds Up Car Spotting

Instant, effortless manipulation, with fast application and release, provide flexible control to permit quick starts and stops of gathering locomotives. Bottlenecks in loading operations due to unwieldy hand brakes are thereby eliminated. Serviceability of existing equipment is enhanced. More loaded cars can be kept rolling, more trips made.

It Accelerates Operation, Safely

This brake is powerful or moderate as occasion demands—light applications for slow-downs or stops from low speeds, heavy applications for quick stops

or adequate control at higher speeds. The brake intensity required on any gradient can be easily attained, and precisely adjusted. Time-saving transit of capacity loads over tracks of varying profile with uniform safety is assured.

**It Protects Electrical
and Mechanical Elements**

Since hand brake manipulation is laborious and slow, some operators run locomotives with partially applied brakes, or reverse motors to check speed or stop quickly. Abnormal load is thus imposed on electrical apparatus and mechanical elements, with detrimental results. The hydraulic brake can be relied upon to furnish adequate and efficient control for any contingency. The savings in maintenance and out-of-service costs, thereby effected, will soon absorb initial cost of the new brake, which thereafter will continue to pay dividends in haulage economies.

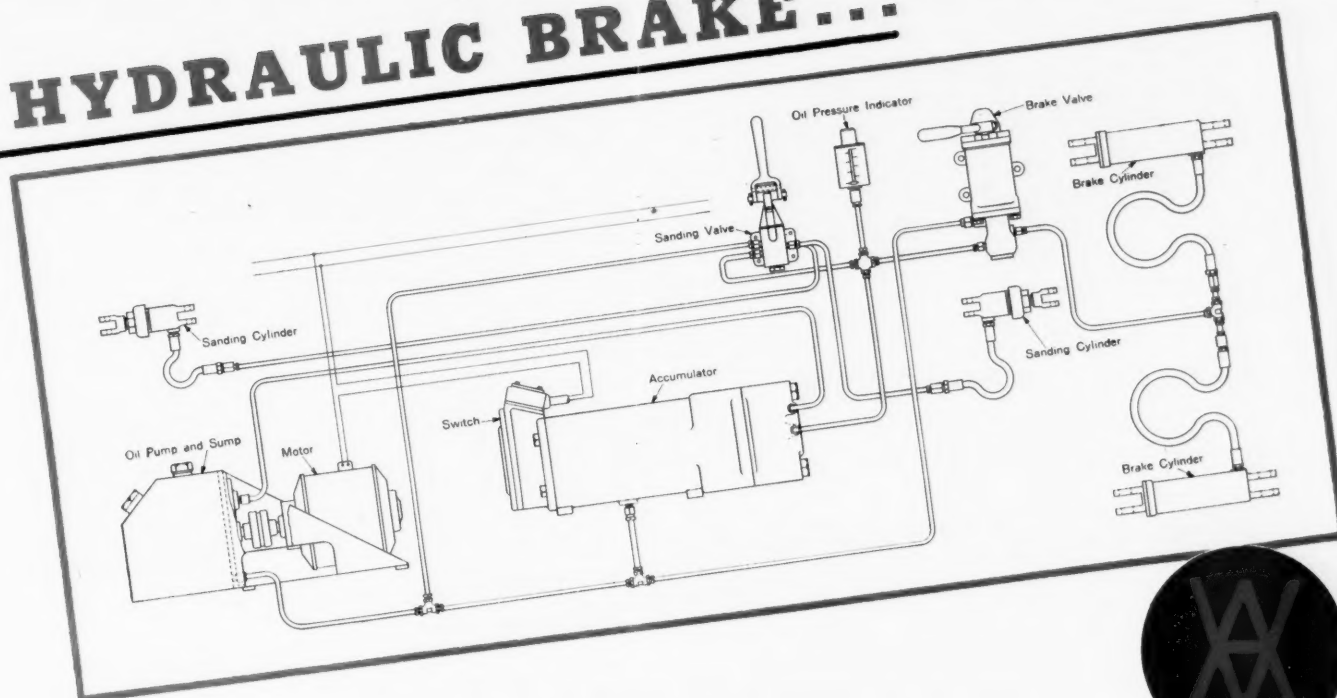
Upon request, we shall be glad to furnish complete information, and quote prices for Westinghouse Hydraulic Brakes.

WESTINGHOUSE AIR BRAKE

Designers and Builders of Brakes, and

this HAULAGE HELPER...

HYDRAULIC BRAKE...



A Simple, Compact System, Easily Installed on Small Locomotives, New or Old Its Source of Power—A Small Volume of High Pressure Oil

A motor-driven Pump supplies the pressure. It is a spur gear type, generous in capacity, reliable, and quiet • An Accumulator limits pressure, by the automatic start and stop method, and also retains an ample margin for brake applications if the Pump is stopped due to loss of power • The Brake Valve is unique in principle and design. Braking force developed is directly proportional to the degree of operating handle movement. Manipulation is effortless, and response instant. Graduations on or off in small increments can be made at will • Brake Cylinders are attached to the existing leverage system—hand brakes being retained for “parking” only • If two locomotives are permanently coupled in tandem,

one Brake Valve controls both units • Hydraulic control of sanding apparatus can be provided if desired.

We also build the following for mine service.

Compressed Air Brakes for larger locomotives.

Air Compressors, motor-, belt-, or steam-driven.

“Savair” Cocks for air lines—efficient, durable.

Air Storage Tanks—many types and sizes.

“Flexair” Valves, for pneumatic control on shovels, hoists, etc.

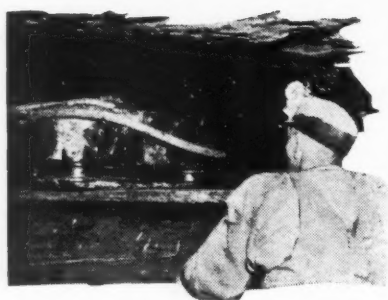
Write us for complete information and prices.

COMPANY, Industrial Division, Pittsburgh, Pa.

Pneumatic Control Apparatus since 1869



Here's the wire rope that helps you move the coal



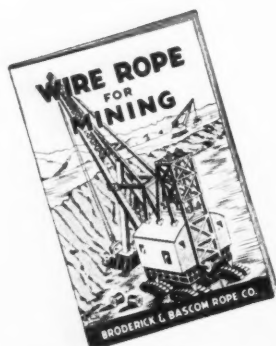
You've got a big job to do. That's why you need the mine cable that helps you get out the tonnage—Preformed Yellow Strand. It's the limber, easy-to-manage rope that installs quickly . . . spools evenly at high speeds . . . takes heavy loads and shocks with a minimum of breaking-in. But there's stamina, too, in its strong, elastic, drawn-to-order steel wires—inbred ability to resist fatigue on cutting and loading machines; to withstand drum crushing and abrasion on main hoists, shovels, inclines; to secure the *full work-capacity* from men and equipment through quicker starts, fewer shutdowns, more sustained production.

In wartime it's a duty and a necessity to use wire rope *efficiently*. For shaft, strip and slope operations alike, install Preformed Yellow Strand and make sure of all possible aid. Its longer life will conserve steel. Its low final cost will save money and widen your opportunity to serve America.

BRODERICK & BASCOM ROPE CO., ST. LOUIS

Branches: New York • Chicago • Houston • Portland • St. Louis

Factories: St. Louis • Seattle • Peoria



FREE—this 96-page Mining Hand Book of useful wire rope facts and tables. Send for it today.

**YELLOW
STRAND
PREFORMED
WIRE ROPE**



A MAINSTAY

OF NATIONAL DEFENSE

SCHWAGER COAL CO.
 MACON COUNTY COAL CO.
 MALLORY COAL CO.
 UNION COLLIERIES COMPANY
 HAZEL BROOK COAL CO.
 UNITED STATES COAL & COKE CO.
 SOUTH UNION COAL COMPANY

Y COAL & COKE COMPANY
 MORGES CREEK COAL COMPANY
 ALDEN COAL COMPANY
 BORA COAL CO., INC.
 T GAGE COAL COMPANY
 N COAL & COKE COMPANY

ANNA COMPANY, AGENTS
 SON COAL COMPANY
 STEEL COMPANY

COAL & COKE COMPANY

DAL COMPANY

BEK COAL CO.

POCAHONTAS

Y COAL CO.

COAL COMP.

AUNTON COAL CO.

COMPANY

ORP., INC.

ERN RAILWAY CO.

MPANY

MINING CO.

ANY

RPORTATION

& R. R. CO.

NG COMPANY

COMPANY

COMPANY

MPANY

ORP.

PANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

PANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

COMPANY

ORP.

COMPANY

EDISON ANTHRACITE COAL CO.
 EMERALD COAL & COKE CO.
 PAGE POCAHONTAS COAL CO.
 JEDDO-HIGHLAND COAL CO.
 BICKNELL COAL COMPANY
 BERWIND WHITE COAL MINING CO.
 CHRISTOPHER MINING COMPANY

COAL RUN COAL COMPANY

COAL COMPANY

CRUICKSHANK COAL COMPANY

CONSOLIDATION COAL COMPANY

THE CONSOLIDATED COAL COMPANY

DOMINION COAL COMPANY, LTD.

FORD COLLIERIES COMPANY

EAST BEAR RIDGE COLLIERY CO.

LENSBURG COAL COMPANY

FRANKLIN COUNTY COAL CORP.

& COKE COMPANY

COAL COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

COMPANY

NOLAN



ROTARY CAR DUMPERS and CAR CONTROL DEVICES

Many producers in every important coal mining area recognize the outstanding dependence and superiority of Nolan Equipment.

Nolan has speeded operations, promoted safety, lowered costs and greatly lengthened mine car life. Built of highest quality materials — Nolan Rotary or Gravity Type Car Dumpers, Trip Feeders, Car Hauls, Automatic Cagers, Platform and Self-Dumping Cages and Cushioned Car Stops are of the heaviest-duty construction for enduring service.

The name Nolan must always mean what it has always meant to mining men everywhere — complete dependability in mine car dumping and control devices.

WESTMORELAND COAL COMPANY
 WHEELING VALLEY COAL CORP.
 WEST KENTUCKY COAL COMPANY
 WASSON COAL COMPANY
 W. VIRGINIA COAL & COKE CORP.

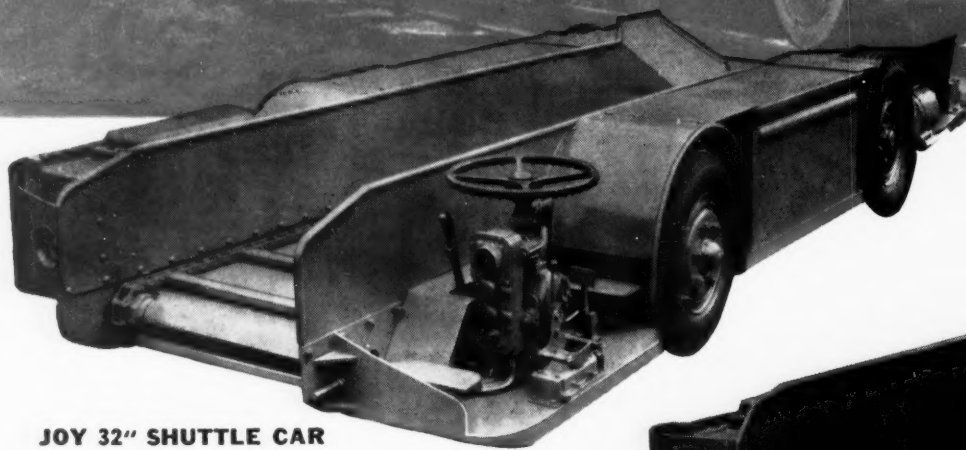
PENNSYLVANIA COAL COMPANY
 PHILADELPHIA & READING COAL & IRON
 NEW RIVER & POCAHONTAS CONS. CO.
 CHICAGO, WILMINGTON & FRANKLIN CO.
 THE YOUGHIOGHENY & OHIO COAL CO.

THE MINING SAFETY DEVICE CO.,
BOWERSTON, OHIO

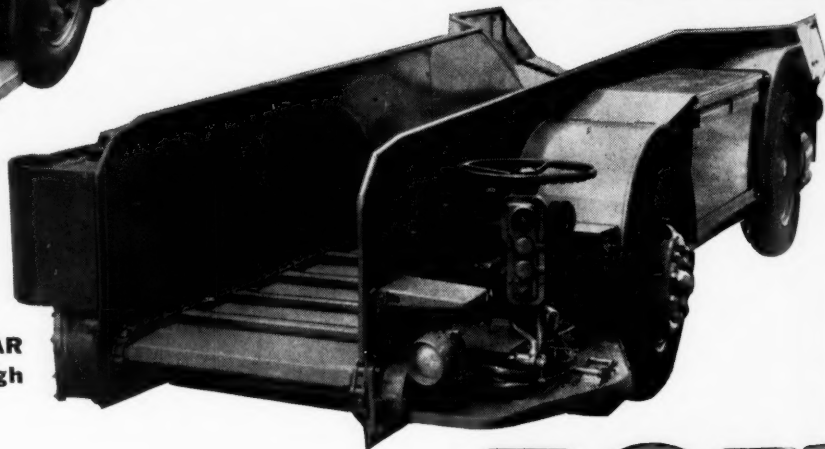
THE RAILROADS OF AMERICA HAVE BEEN FORCED TO MODERNIZE

The slow, grinding, crawling freight is a relic of the past—
Today, Modern, Streamlined . . . fast locomotives . . .
move the nation's freight at a speed that often equals
the crack flyers—America's Railroads are on the move

So it is in coal—leisurely, costly methods are a thing
of the past. Mechanization speeds up output, modernizes
methods—lowers costs. A Joy Engineer is available for
counsel at your convenience.



JOY 32" SHUTTLE CAR
3½ ton capacity for low
seam operations.



JOY 42" SHUTTLE CAR
6 ton capacity for high
seams.

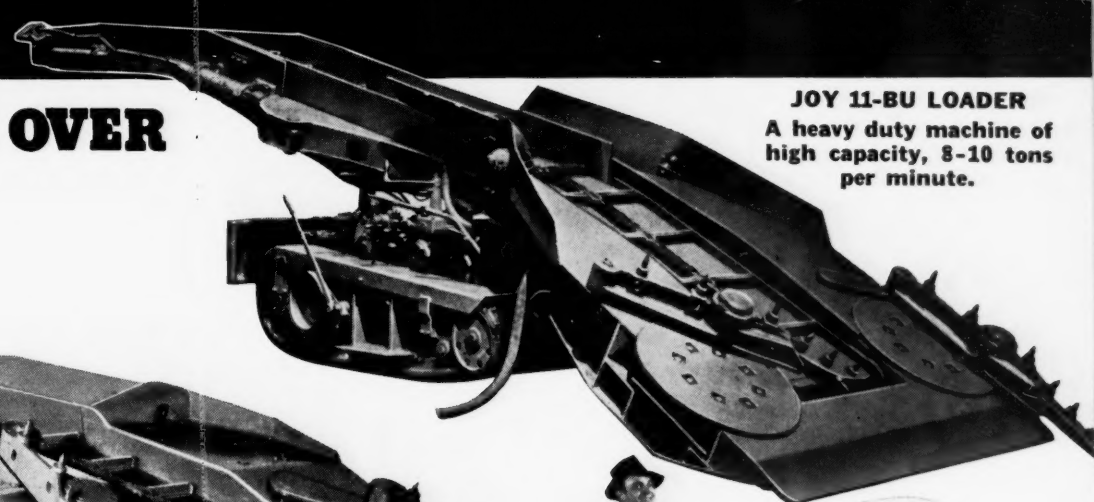
**THE HORSE AND BUGGY
IN THE COAL INDUSTRY**

JOY

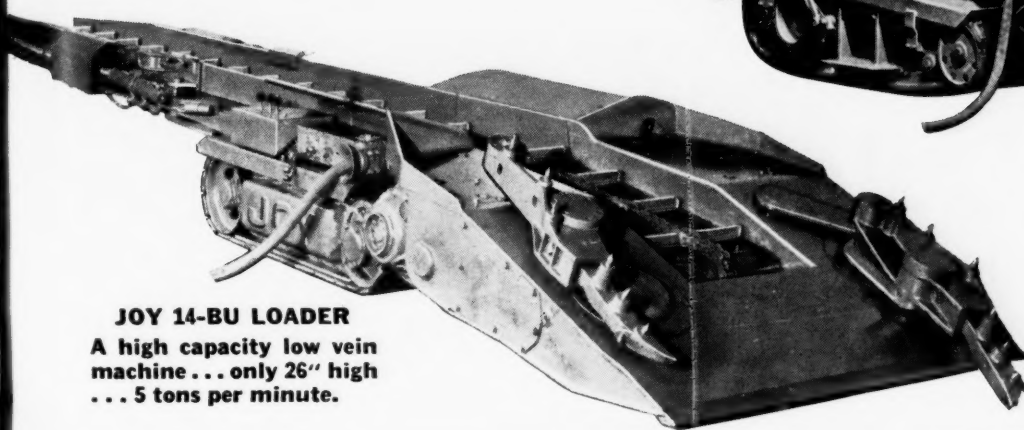
MA



**BUGGY DAYS ARE OVER
INDUSTRY . . .**




JOY 11-BU LOADER
A heavy duty machine of
high capacity, 8-10 tons
per minute.



JOY 14-BU LOADER
A high capacity low vein
machine . . . only 26" high
. . . 5 tons per minute.

**WHATEVER
YOUR PRODUCTION
PROBLEM
MAY BE -**

MANUFACTURING CO., FRANKLIN, PA.



*Consult a
Joy Engineer*



Cut Right . . . with a Bench Cutter

A fresh cut, square cut fuse insures a strong end spit and avoids missed holes.

The Ensign-Bickford Bench Cutter consists of a keen blade operating within a slot with a perfect shearing motion that cuts the fuse squarely and cleanly without squeezing the end of the fuse or dragging the waterproofing compound across the powder train.

The cutter can be screwed to the end of the primer bench or service box. Cutter handle and blade are detachable.

THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONN.

Manufacturers of Safety Fuse since 1836—also Primacord-Bickford Detonating Fuse



8F-123

ENSIGN-BICKFORD SAFETY FUSE

Coal Age

Established 1911—McGraw-Hill Publishing Co., Inc.
SYDNEY A. HALE, Editor • APRIL, 1942

Inventories for Priorities

TWELVE months ago the April issue of COAL AGE was dedicated to the coordination of men, management and machines for national defense. Now, under war conditions, with mining the number one industry, the April, 1942, issue of COAL AGE is dedicated to the cooperative effort of coal producers, makers of consumable supplies and equipment manufacturers with the Mining Branch of the War Production Board to provide for the greatly increased quantities of raw materials and power needed for our Victory machine.

THERE is no question but that coal is one of the prime essentials of the war program and that modernized production methods must be used to boost output and to conserve our available man-power. A glance at the figures showing the rise in bituminous output, from 3.78 tons per eight-hour-man-day at the close of the last war, to an estimated 5.20 tons per seven-hour-man-day at the time of our entry into World War II, high-points the progress made in improved techniques and the substitution of machines for man-power in a period of exactly twenty-four years.

MACHINERY must be constructed and installed, maintained and re-

paired, from a continually available and ever-increasing inventory of supplies in order to meet our rising national fuel demands. Metals and materials listed as critical must now be set aside for coal's future use, or substitutions immediately made, in order to do the job ahead.

HENCE where coal producers file information relative to the importance of their operations from the war effort standpoint WPB's Mine Priorities Branch grants preference rating numbers allowing their participation in the benefits of the mining order. To WPB's Mine Priority Branch, makers of mining machinery or equipment and supplies also apply and obtain ratings for access to needed materials. One of the first to receive an over-all priority by WPB, mining is now in position to use the highest rating available where necessity demands it.

THOUGH the Mining Branch of WPB is working patiently and sympathetically with many coal operators and coal equipment and supply manufacturers to coordinate their needs to the war tempo of our industry, additional planning is now necessary.

INVENTORIES, from the standpoint of machinery needed to produce

coal for the remainder of this year and for the duration, plus the repair and maintenance supplies consumed in operation, are requested from the producer. Inventories, from the standpoint of materials needed to make equipment and supplies for the remainder of this year and for the duration, are required from the manufacturer.

TOO FEW operators have made systematic appraisals of their future needs in producing at their normal output levels and practically none is anticipating his equipment and supply requirements at the combined rate of 660,000,000 tons annually for anthracite and bituminous coal. Consequently, too many suppliers and manufacturers have incomplete estimates of the ultimate demands ahead.

WILBUR A. NELSON's appeal to both coal operators and mining machinery manufacturers, in this issue of COAL AGE, for an "inventory" of their supply and equipment needs for the remainder of this year and for 1943 bears particular significance when viewed in the light of existing "priorities" and those probably to come. Your complete cooperation is requested by the administrator of the Mining Branch of the War Production Board.

KEEPING COAL IN STEP WITH VICTORY PROGRAM

Why and How the Industry Must Inventory Its Equipment and Supply Needs Ahead to Insure Ade- quate and Continued Production for the Duration

MINING essential minerals for the war program is one of the first industries requiring top priority, and government immediately recognized this inseparable relationship between adequate coal, metal and non-metallic production for building, equipping and operating our own and our allies' war machines.

In the opinion of the Mining Branch of the War Production Board and expert observers in other Washington departments, the coal industry must be producing at the rate of 660,000,000 tons per year by the fall of 1942 to keep pace with present indicated demands. This estimate is at the rate of 600,000,000 tons for bituminous and 60,000,000 tons of anthracite coal per year. Although we have no coal shortages at present, such can develop quickly unless the rapidly increasing consumption of coal from all major fields warns the industry and its suppliers of necessary equipment that now is the time to take stock of 1942 mechanical and supply requirements. If the industry does not take the initiative in forward planning for its remaining 1942 production, how can they expect to be taken care of in 1943?

In general, the makers of mining machinery and supplies have cooperated fully with the Mining Branch of the War Production Board in estimating their manufacturing needs as they involve raw materials now on the critical list. But many coal operators are still

By **WILBUR A. NELSON**

Administrator of Mining Branch, WPB.

lagging in preparing themselves and the manufacturers upon whom they will be drawing for increasingly needed supplies against the day ahead when still more output per man-hour must become the operating watchword of coal if it is to meet its war load demands on time.

Although most manufacturers and suppliers have already given advance estimates of their requirements for critical raw materials, we are unable to protect the over-all industry until each individual coal operator has similarly estimated his requirements for ceiling production ahead and has informed us accordingly. Requests for this cooperation must now be heeded or government demands will become imperative before serious impairments of adequate production confront us, later on. For example, many operators who require critical materials in large quantities for their own repair shops and maintenance operations still stand "unreported" in our records to date for future planning. Do such operators want to be told that necessary materials are unavailable? Must such mines shut down for want of vital repair parts or maintenance items, when even top priorities can't help them get the needed materials in time?

If we are going to do our part to

carry out the President's war program there is one outstanding fact we must know without delay—what are the over-all needs of the mining industry for the balance of 1942 involving materials already on the critical list? I hereby appeal to the industry for prompt and full cooperation on this vital point.

What Every Mine Operator Must Do

Under Preference Rating Order P-56, known as the Mining Order, a coal operator must receive from the Mining Branch of WPB a certified number before participating in the benefits of this order. Application for such a certificate to the State Coordinator of Mines must give pertinent information about the operation. All State Coordinators forward this information to the Mining Branch of WPB and a certificate will immediately be issued, provided the operation is essential to the war effort.

Order P-56 as amended on March 2 gives a A-1-a rating, extendible on this level, for any machinery or items needed to care for a breakdown causing a partial or complete shutdown of the mine. Applications for such ratings are made through the Mining Branch in Washington and are handled on a 24-hour-per-day basis. Repair parts for mining machines listed in Schedule A (for complete order see p. 101) now have a blanket A-1-c rating extendible on this level by suppliers. An opera-

tor orders directly from his supplier by stamping on the suppliers' order the A-1-c rating and the clause specified in the mine certificate giving his serial number. However, repair parts can be bought only within a dollar value quota to be established for each operator on a quarterly basis by the Mining Branch of WPB. This quota is based on the dollar value of repair parts bought in the corresponding quarter last year and is revised on a tonnage production basis from time to time.

Operators must apply to the Mining Branch for approval of every new machine listed in Schedule A which they wish to purchase. The Mining Branch, under the revised order, can give whatever priority rating is necessary so that the operator will get the needed machine. Such, in brief, are the provisions of the new amended order.

So that advance planning may maintain our cooperation within the industry, it is now equally necessary for every coal operator to make an advance "inventory estimate" of total equipment, material and supply quantities needed for operation as planned for the balance of the year 1942. If such an estimate has not already been made and forwarded to us, I hereby urge every coal operator to do so at once.

These estimates should be broken down by types of materials and equipment purchasable from usual sources of supply and copies forwarded to those concerned, so that these sources may plan their capacities and coordinate their requirement of critical materials with WPB's future allocations.

What Every Manufacturer and Supplier Must Do

Makers of mining machinery or equipment of the types and kinds listed on Schedule A of Order P-56 are entitled to priority assistance under Preference Rating Order P-56-a.

To apply for such assistance the manufacturer must fill in and submit to the Mining Branch Form PD-25A for each calendar quarter. This form is then reviewed, and if

the manufacturer is eligible he is given ratings on the various items listed in the schedules. A serial number is then assigned to him and he may purchase his requirements in the amount specified under the ratings listed. Manufacturers so applying should plainly mark across the first page of Form PD-25A the notation: "Submit under Order P-56-a."

In addition to the estimates of materials needed, on standard Mining Branch forms each quarter, manufacturers are now asked to urge their customers and those contemplating the purchase of equipment and supply items in their respective fields to designate their approximate requirements for this year and for the duration. Such forward planning will enable the manufacturer and, in turn, the Mining Branch of WPB, to reach more definite conclusions as to total vital materials which must be earmarked for the mining industry this year and for the duration.

What the Mining Branch of WPB Will Do

We are set up to care for all needs of the mining industry where priorities are concerned, in order that supplies, maintenance items and new machines can be obtained. We are administering three priority orders: P-56, known as the Mining Order, described above; Order P-56-a, known as the Mining Machinery Order, described above, and Order P-73, relating to non-ferrous smelters, which is only of corollary interest to the coal industry. The mining industry was one of the first granted an over-all priority by WPB. The first order was issued on Sept. 22, 1941, and the present order is the original as amended on March 2. The mining industry is now in a position to use the highest priority ratings available where necessity demands it. Remember, in order to get these high priority ratings, it is necessary that they be cleared through the Mining Branch in Washington, with the exception of the A-1-c rating for repair parts on a dollar quota basis, which can be cleared directly with the supplier under the terms of Order P-56.



Sum and Substance of it All

If every coal operator and interested manufacturer will work together in building an advanced inventory of estimated requirements for the balance of the year 1942 along foregoing lines, the Mining Branch of WPB will do its utmost to insure continued access to all necessary materials for the continuance of adequate coal production. To emphasize the importance of this job we need only cite the fact that already the manufacturers of mining machinery are as many times short of spare parts and renewal items as in normal times.

Remember, even top priority ratings involve restrictions under today's conditions. We have only a limited quantity of critical materials. They must be allocated to every essential war use. Their production must be geared to our over-all "timetable" for these allocations. So there is a time limit within which the Mining Branch must work to protect mine operators and their supplies.

As Donald M. Nelson has so aptly said for months past: "Time is short"—and every day it is getting shorter. We invite every operator and manufacturer to communicate with the Mining Branch of WPB for the cooperation necessary in carrying out our mutual responsibilities. This cooperation will insure the coal industry's uninterrupted vital part in the victory effort.

WASHINGTON ROUNDUP

Highlights From the Nation's Nerve Center

Price Ceiling

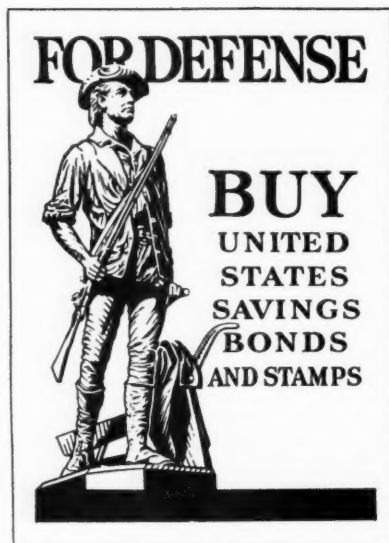
Arrangements to prevent war-time inflation of coal prices are to be made by cooperation of Harold L. Ickes, Solid Fuels Coordinator and Price Administrator Leon Henderson, it was announced March 14 following an exchange of letters (see news section). The Coal Division will recommend to OPA proper steps under powers vested in the latter by the Emergency Price Control Act with reference to soft-coal prices charged by producers, distributors and sales agents.

Worked out under Sec. 201 (a) of the price control act, which permits the Price Administrator to utilize the services of other federal agencies in administering the act, the Division is empowered to handle hearings, conferences, correspondence, etc., where needed in carrying out its function of advising on producer and wholesale prices.

For All-Out War

A CONTINUING national drive designed not merely to increase production at once but to keep stepping it up further as the war continues has been undertaken by the War Production Board, says Donald M. Nelson, chairman. The principal aims of this drive are to increase production immediately in plants which now have war contracts and to convert other plants to war production as speedily and completely as possible.

This step was taken in response to a letter from President Roosevelt warning that the months just ahead are the critical months of the war, victory depending "in large measure on the increased war production we are able to get from our factories and arsenals in the immediate future. What has been done



so far must be exceeded. This is total war. . . . To win we must fight."

The drive is to be made effective in a variety of ways, including: stimulation of pooling and cooperative use of manufacturing equipment, especially machine tools; recognition and awards for outstanding industrial accomplishment both by management and labor; establishment of a plan for joint labor-management war-plant committees which will consider suggestions from all quarters for increasing output and which will help demonstrate the importance of our soldiers of production.

Early Lake Season

WITH the first cargoes of coal leaving Toledo for Detroit on March 16 the lake shipping season got off a month earlier than usual. Secretary of the Interior Harold L. Ickes, Solid Fuels Coordinator, said the pre-season start would give the Great Lakes shippers a great boost toward successfully meeting this year's war-

expanded coal requirements. He emphasized that this early movement would kill two birds with one stone in that it, with early movement of iron ore from the upper lake region, would relieve pressure on the railroads.

Efforts to get the lake shipping season off to an early start were initiated by Mr. Ickes on March 6, when he announced that the Office of Solid Fuels Coordination was assisting shippers and transporters to get pre-season insurance rates reduced sufficiently to permit practicable operations as soon as navigation conditions made shipments possible.

Complacency

COMPLACENCE is the besetting sin of coal consumers with the United States at war. Repeated warnings and appeals by Luther Harr, Bituminous Coal Consumers' Counsel; Solid Fuels Coordinator Ickes and Acting Coordinator Gray that consumers accumulate stockpiles while transportation facilities are adequate have been without avail.

Mr. Gray informed Secretary Ickes on March 7 that, despite reiterated appeals, consumers generally had failed to store coal against possible shortages. His report showed that stocks of bituminous coal in consumers' bins and yards as of Feb. 1 represented an average of 34 days' supply as compared with an average of 40 days' on Jan. 1 and 43 days' on Dec. 1.

With completion and organization of the Industry Committee on Solid Fuels on March 10 Secretary Ickes proposed that the group immediately launch a campaign for storage by consumers to avert the necessity of allocating supplies if and when transportation facilities become inadequate.

quate. It was pointed out that there is still ample mine and production capacity for consumers to build up stockpiles as insurance against interruptions in supply that may be caused by war.

Mask Making Limited

MANUFACTURE or sale of gas masks and anti-gas devices for protection against enemy attack has been banned by the War Production Board unless the masks and devices are actually on order by agencies of the government, including the Office of Civilian Defense, and are constructed to Army Chemical Warfare Service specifications. Masks manufactured for fire fighting, mining, industrial, scientific and similar non-military purposes are not affected by the order, provided they are advertised and sold for such purposes.

Limitation Order L-57, issued after consultation with the Chemical Warfare Service and the OCD, is designed to halt a fast-growing sale of unapproved gas masks to the civilian population and to effect the most complete standardization possible. The order also prohibits the delivery or sale of any laminated cloth, laminated glass or plastic lenses, metal buckles or buttons, primary or activated charcoal, rubber, synthetic rubber, webbing or duck for use in unapproved masks. Producers who have manufactured or sold any unapproved masks or devices since Jan. 1, 1941, or who had in their possession or under their control more than ten such masks or devices on the effective date of the order are required to report to the WPB on Form PD-328.

Transport Manpower

WITH shortages of skilled mechanics already acute in some parts of the industry, the Office of Defense Transportation has undertaken a detailed survey of the transportation industry's present and anticipated labor shortages. Many employment officials in the industry are concerned over the problem of maintaining manpower at the level necessary to meet the demands for transportation service occasioned by the war program, according to Joseph

B. Eastman, Director of Defense Transportation.

The most pressing manpower problems now facing the industry are expected to be revealed by the survey. In the light of the information unearthed, plans will be made by the Division of Transport Personnel looking to expansion of the training programs that various branches of the industry have already undertaken and to recruiting new personnel to meet the rapidly expanding need for transportation service and to replace employees diverted to the armed forces.

New Health Chief

DR. WILLIAM B. FULTON, senior surgeon in the U. S. Public Health Service Reserve and a former director of the Bureau of Industrial Hygiene of the Pennsylvania Department of Health, has been appointed chief of the Health Division in the U. S. Bureau of Mines. Dr. R. R. Sayers, director of the Bureau, points out that expanding activities in safeguarding the physical welfare of mine workers have become increasingly important since accelerated war-time production of many metals, fuels, and other minerals has introduced new health hazards and emphasized old ones.

More Fuel Control

CLOSELY on the heels of denial for the third time by the War Production Board of steel for construction of Oil Coordinator Ickes' so-called national defense pipeline came promulgation on March 14 by the Director of Industry Operations of Limitation Order L-56, designed to conserve stocks of fuel oil in 17 eastern states, the District of Columbia and two Pacific Coast states.

Effective immediately, the order forbids delivery of fuel oil for use in any new equipment unless installation is completed within 30 days, or in any converted facilities unless the conversion is completed within 10 days. An exception is made in the case of new construction if foundations are completed within 30 days and if fuel-oil burning equipment is specified in the con-

struction contract. No other exceptions are made unless authorized by the Director of Industry Operations.

Consumers now using fuel oil also are forbidden to accept additional supplies unless they are making full use of standby facilities using fuels or power other than electricity or natural gas. Suppliers are not allowed to make deliveries of fuel oil to such consumers unless the standby facilities are being used to the fullest possible extent.

The order also provides that the Director of Industry Operations may examine fuel-oil burning facilities already installed and suggest conversion for use of a less scarce fuel. After notice sufficient to permit such conversion the Director may forbid further deliveries of fuel oil to the consumer who fails to convert.

The areas to which the order applies are: Connecticut, Delaware, Florida, Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, Washington, West Virginia, and the District of Columbia.

Hallmark of Democracy

HEARINGS before the full National War Labor Board are to be thrown open to the public, the Board has decided. "The practice by public bodies of holding open hearings is one of the hallmarks of democracy," said William H. Davis, chairman of the Board, in commenting on the change in procedure.

"Because of the national agreement between management and labor that there shall be no strikes or lock-outs for the duration of the war and that all disputes shall be settled by peaceful means," the chairman added, "the decisions of the Board have a quasi-judicial character. The American people are entitled to as much information as possible concerning the facts considered by the Board in reaching its decisions." The Board amended Rule 10 of Administrative Regulation No. 2, Rules of Procedure, to open hearing sessions of the Board to the public unless in particular cases the Board rules otherwise.

SAFETY AND EFFICIENCY

Characterize Old Ben No. 8 Mine Fully Modern, With Track-Type Equipment

SAFETY of men, protection of property, and mechanical efficiency characterize the modern mine. A successful blending of these essential factors is abundantly evident in Old Ben Coal Corporation's operations, of which No. 8, the subject of this article, is typical of a group of four in the No. 6 vein in southern Illinois. Production from the four, aggregating 16,000 tons daily, is shipped to industrial and domestic consumers over a wide market area.

Old Ben No. 8 is within the southern limits of the city of West Frankfort, in Franklin County. It is served by four railroads, the Chicago & Eastern Illinois; Chicago, Burlington & Quincy, Illinois Central and Missouri Pacific. The property was opened in 1909 on a hand-loading basis, and remained so until the introduction of mechanized methods in 1922. Current production, one shift, is 4,350 tons. Many acres of virgin coal are still to be mined from the present opening.

Average thickness of the vein is 8.5 ft. One foot is left to support a tender, sandy shale roof which requires systematic posting and frequent use of timber sets. Permanent entry roof supports consist of 10-in. steel I-beams on short horizontal lengths of 90-lb. rail, in turn supported by two 6-ft. rails of same weight hitched and cemented into the rib line (Fig. 6). In advancing places, one row of props, on 5-ft. centers, is carried on each side of the track to a point about 20 ft. from the face.

The vein normally is level, but frequent rolls may extend for considerable distances and cause grade variations of as much as 12 percent. These, however, are successfully negotiated by the track-mounted cutting and load-

Typical of a group of four Old Ben operations in southern Illinois, No. 8 reflects the management's concentration on efficiency with safety. Efforts to the latter end include complete cooperation with employees and use of all modern safeguards, including rock-dusting and new-type bag barriers. Track-mounted cutting and loading equipment averages 425 tons per shift, with a car change of 43 seconds and carbon-dioxide coal breaking.

By **IVAN A. GIVEN**

Associate Editor, Coal Age

ing units with no appreciable effect upon performance.

The mine is entered by a shaft 451.4 ft. deep from collar to the coal bottom. A 5,000-gal. sump on the bottom is equipped with an automatically controlled 300-g.p.m. 6½x8 in. triplex pump. Above this and below the cage landing is a chute from the shaft to catch spillage during hoisting—removed in a mine car by a hoisting rope in a tunnel driven from the mine level.

Pillars protecting the bottom are strengthened by concrete retaining walls carrying 15-in. I-beams on 6-ft. centers, with 2-in. plank lagging to support an insecure roof structure. On the bottom are an office, a well-equipped repair shop, a supply parts room, excellent illumination, ample clearances, and a track and caging

arrangement that permit efficient and economical handling of 700 tons of coal per hour. At this point begins Old Ben's highly developed system of rock-dust barriers. Clean and orderly appearance is an important part of the good housekeeping throughout the operation.

The 42-in. gage main line extends 11,400 ft. Average grade is 1 percent in favor of loads, and the line is double-tracked 8,400 ft. from the bottom. It is laid with 75-lb. rail on 5x7-in. oak ties treated with 8 lb. of creosote per cubic foot. Treated ties are limited to entries in service over 2½ years. As this track is regarded in the light of a railroad and as it is the main artery of the mine, over which fast and heavy traffic must move without interruption, great care is exercised to maintain alignment and condition. Traffic is controlled by a dispatcher and a block-signal system. Main-line turnouts are laid with No. 4 converted railroad frogs; room turnouts with No. 2 frogs. Cross entries are laid with 40-lb. rail on ties similar to those on the main line, with 30-lb. rail on steel ties in rooms. Main-line trips are hauled by four 13-ton and three 8-ton locomotives.

Mine cars, 450 in service, are wood end-dump units weighing 3,800 lb. and holding 3.3 tons mechanically loaded. They are equipped with anti-friction-bearing wheels. Trailing loads comprise a maximum of 30 cars with an aggregate rolling weight of 156 tons. Gathering and relaying of trips are handled by fifteen 6-ton and eleven 8-ton cable-reel locomotives.

Hoisting at 200 plus trips per hour is handled by a 7- to 11-ft. two-drum cylindro-conical Nordberg hoist directly connected to one 2,200-hp. 110-

r.p.m. d.c. motor, supplied with power by a 1,500-kw. motor-generator set on the same floor. The wire rope is 1½-in., 6x19, modified Seale construction, Lang-lay, with a life of over 500,000 tons. Geared to one end of the hoist drum by a clutch arrangement is a 300-hp. auxiliary induction motor used when coal is not being hoisted.

Power is supplied by the Central Illinois Public Service Co. and is distributed over the corporation's own system to all four properties. It is received at 33,000 volts at No. 8 and is stepped down at several strategically located transformer stations to 2,300, delta-delta connection. Total transformer capacity is 3,201 kva. Maximum 15-minute demand reaches 2,000 kw. Consumption per ton of coal mined and prepared averages approximately 4.6 kw.-hr. Synchronous motors contribute to the relatively high power factor of 98 percent.

Total d.c. substation capacity is 3,200 kw., of which 1,500 is taken by the main hoist motor. The balance, except for one spare 435-kw. set, is distributed among three substations suitably located on the surface for balanced distribution underground. An attendant is on duty at each station

and one attendant looks after the fan.

D.c. at 275 volts is carried underground by concentric stranded copper cables (500,000 to 2,000,000 cir.mils). Small-diameter boreholes now are drilled at low cost to accommodate a concentric cable with a 500,000-cir.-mil. outer copper jacket used as the return. Power is carried down through

two shafts and one cased borehole. Positive feeders underground are bare stranded copper, 500,000 to 1,000,000 cir.mils, depending upon the service. Negative lines, supplementing heavy rail grounds, are suspended above the floor. Size 6/0 trolley wire and welded 4/0 flexible copper bonds and cross bonds (200 ft. apart) are standard. Transformer and motor-generator stations are kept on the surface. Transmission distances are limited. As the workings advance, new boreholes are drilled so that substations can be located nearer the face.

The panel system (Fig. 1) is used at Old Ben No. 8. Two-heading cross entries are turned off the main entry on 1,500-ft. centers. After the cross entries have advanced 350 ft., the number of headings is increased to four, continuing to the boundary line. Panel entries are turned at 90 deg. off each side of the cross entries on 550-ft. centers and are driven 735 ft. Rooms 25 ft. wide on 45-ft. centers and 250 ft. deep are turned both ways off these panel entries. In driving rooms, Nos. 6 and 7 on one side and Nos. 8 and 9 on the other are skipped, providing two undisturbed pillars 90 ft. wide. Room crosscuts are staggered on 45- and 60-ft. centers.

In developing a panel, the outside rooms are driven to the first crosscut only, the idea being to reach the end of the panel as rapidly as possible and leave the maximum of solid coal for the retreat (Fig. 1). The last room in the panel is the first worked out. The other rooms are advanced in step to form a diagonal line of faces. When the rooms inside the middle blocks reach those barriers, pillar drawing commences. As the retreat proceeds,

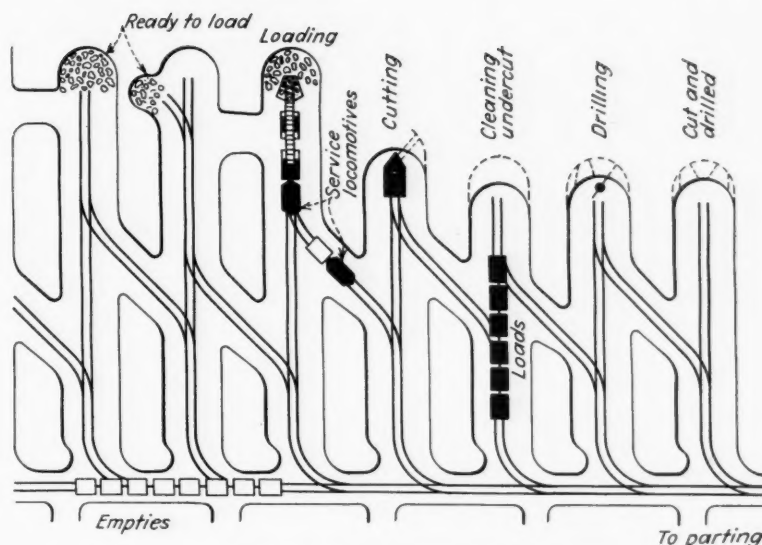


Fig. 2—Track and switching layout, Old Ben No. 8.

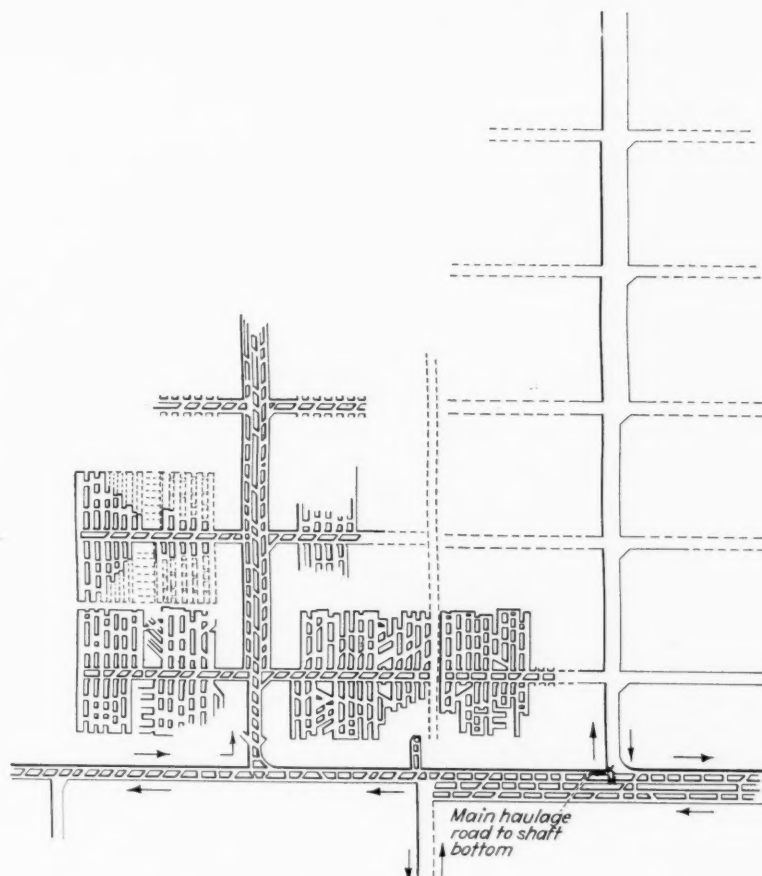


Fig. 1—Development plan and typical panel sections at Old Ben No. 8.

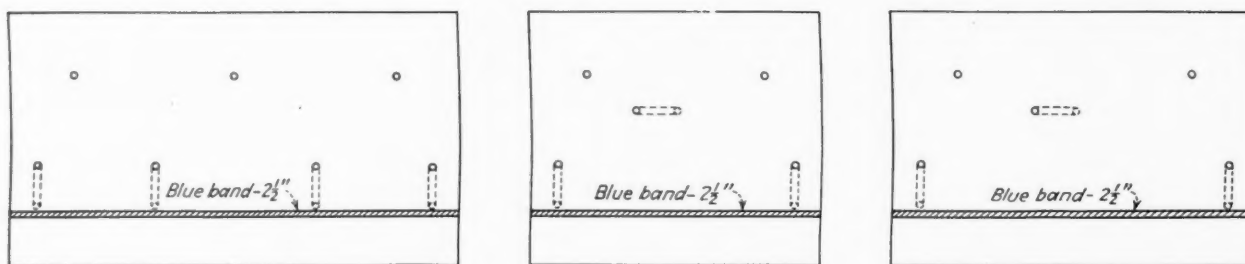


Fig. 3 (left)—Drilling pattern for 25-ft.-wide room; Fig. 4 (center)—14-ft. heading; Fig. 5 (right)—16- to 18-ft. room crosscut.

the rooms outside the blocks are started and work is commenced on the blocks themselves. By the time the blocks have been opened up, the retreat is complete in the inside rooms and the material has been recovered. The outside rooms are treated in like manner. The system works well under the prevailing conditions and has enabled the company to obtain, with safety of men and equipment, a favorable percentage of extraction and material recovery as follows: props, 40 percent; ties, 90 percent; rails, 100 percent.

Tracks are interconnected through all crosscuts, providing flexibility and a great sufficiency of turnouts for switching trips and speeding cars to the loading unit (Fig. 2). Trackage in service is no greater than in other systems, although the number of switches is increased. The cost of additional switchlaying, however, is more than compensated for by the gain in loading time resulting from the reduction in changing time, which averages 43 seconds per car.

Loading machines are served by two locomotives. A relay unit operates between the panel and the main-line parting. A trip of six to eight empties is spotted in the clear in the panel by the relay locomotive. Loads are made up in a room adjacent to the loader. Gathering locomotives alternate in serving one car at a time to the face and both locomotives make up the same loaded trip (Fig. 2).

Face preparation is an important item in mechanical loading. Care must be exercised in mines, such as Old Ben No. 8, which produce for the domestic market, to provide falls with a maximum of the larger sizes. To meet this requirement, a standardized system of drilling, cutting and shooting is followed. The effect is to set the face down in a condition imposing a heavier burden upon the loading unit, which must be well built, amply powered and provided with a digging mechanism able to operate under the added load.

To avoid tight spots across the face, particularly at corners, and to relieve the burden on drilling and shooting, a straight rib line, free from gouging, is maintained. Seven Goodman Type 324 track-mounted cutting machines with 9-ft. bars are employed. The radius of the cut approximates the swing of the loading-machine head, and the combination of mounted cutters and loading machines holds tracklaying costs to a minimum, inasmuch as the same laying serves for both operations.

Drilling the Coal Face

Drilling is done by Chicago Pneumatic post-mounted electric drills equipped with 3-in. augers, 3 1/2-in. heads and "Humdinger" single-ended bits. Seven holes, three at the top and four above the characteristic "blue band" (Fig. 3), are drilled in wide places. Five holes, two at the top, one slightly offset from the center and two snubbers at the bottom (Figs. 4 and 5), are drilled in narrow places. Low-pressure Cardox tubes break down the coal and are fired one at a time. Room falls make approximately 60 tons; room crosscuts, 43 tons; narrow, or entry, places, 28 tons.

The operating cycle is as follows. Immediately after the cleanup the track crew advances the track to within 5 1/2 ft. of the face. The cutting machine follows. Average time to cut across the face is 25 minutes. A "bug-duster" follows and thoroughly removes cuttings from the kerf, as an

uncleaned kerf partially destroys the purpose of cutting, creates a hazard and increases drilling and blasting requirements. The drill crew follows closely behind the cutting crew. One timberman sets props and sees that the places are otherwise safe before the loading machine enters. Face preparation is done only on the day shift, with the exception of shooting on the following shift.

Eight Goodman Type 260 track-mounted loading machines are in service. Old Ben has standardized on this loader for all mines and has installed 27. Average output per machine shift (both cutting and loading machines) is 425 tons, despite a relatively small car, harder loading, a large percentage of narrow and pillar places and an absence of spare production equipment. Frequently, more than 500 tons are loaded per shift. Car changes per shift, at an average of 43 seconds each, average 130, reflecting the attention given to track and switching. Plans now under consideration are expected to reduce changing time still more with consequent increase in loading time per shift.

Average age of the cutting and loading equipment is four years. Several units have been in service six years. None of the machines has undergone a complete overhaul and maintenance costs have been low, speaking well for both the machines and the Old Ben maintenance program. A mechanic is on duty in each operating section to make minor repairs and supervise

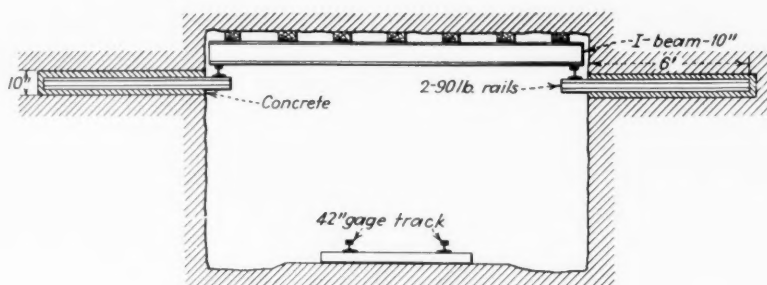
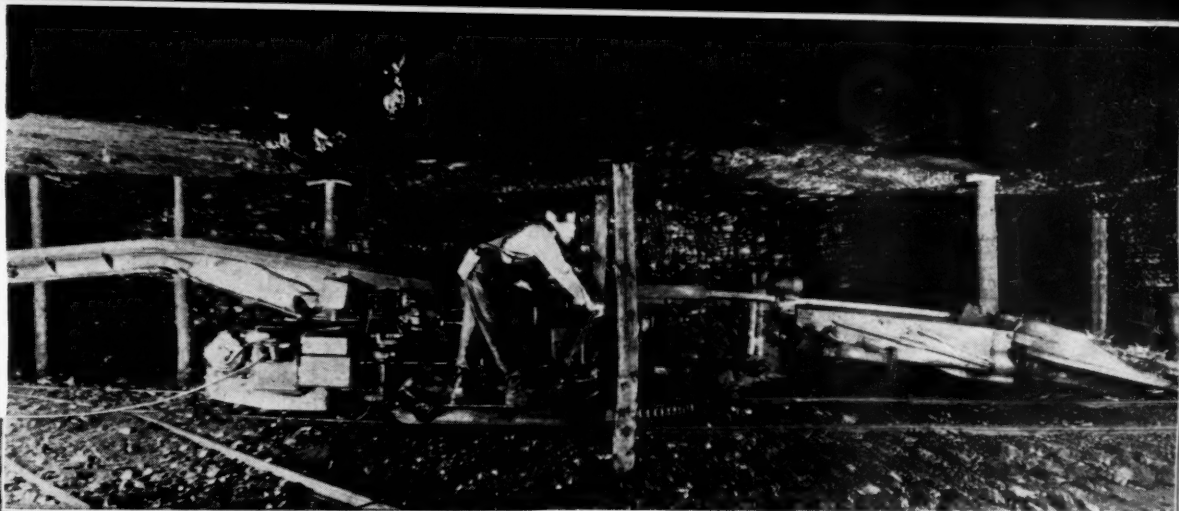


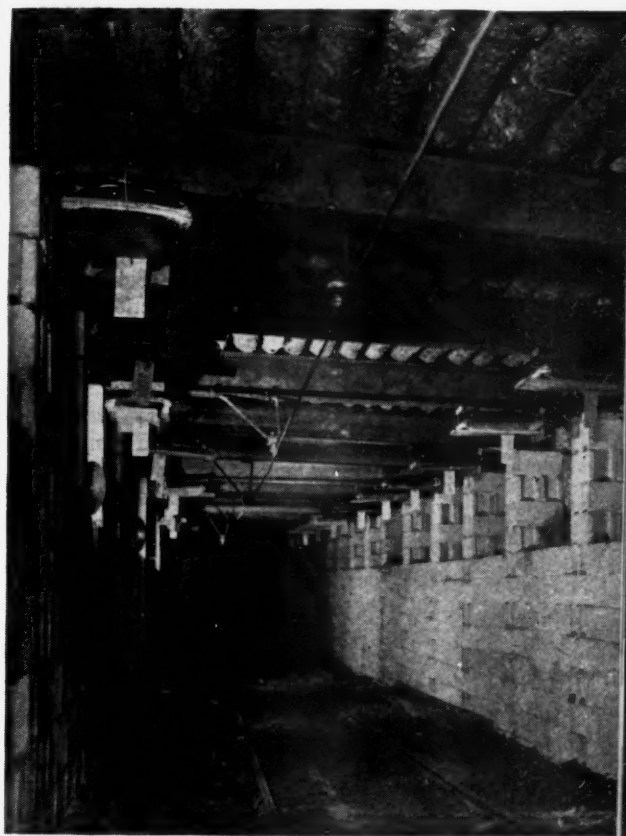
Fig. 6—Entry roof support at Old Ben No. 8.



Track-mounted loader on the move to a new place.



Cutting a room face with track-mounted unit.

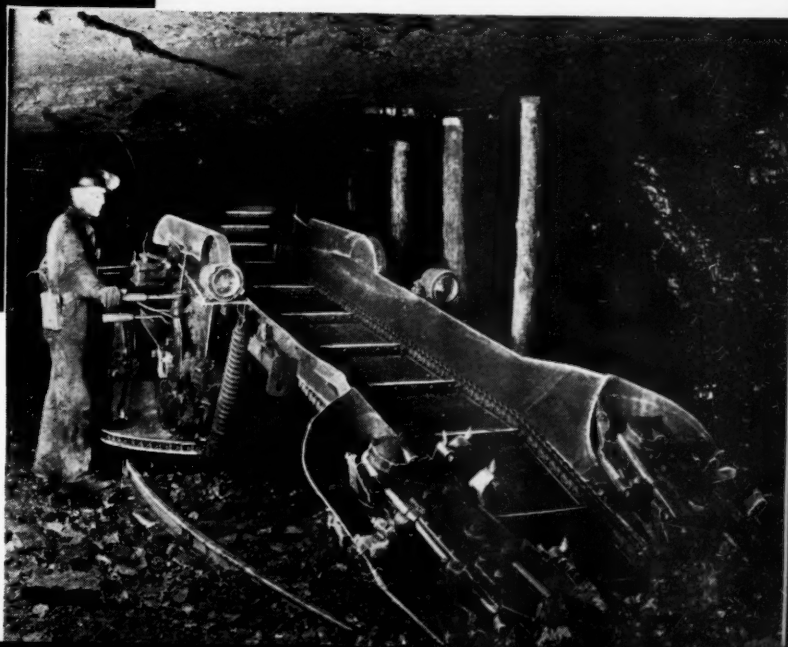


View on the main line showing one type of roof support and bag-type rock-dust barrier, with one bag (right, front) in dropped position after accidental tripping.



Bag-type barrier in a back heading at Old Ben No. 8.

Ready to start bailing up coal.



equipment lubrication. Loading machines are equipped with conveyor chains with a tensile strength of 22,000 to 28,000 lb. New chains, when required, are installed on the front end, the old front chain being removed to the rear conveyor. These chains handle 400,000 to 500,000 tons before being discarded.

The 9-position wedge-type cutter-chain lacing is used, with standard pick-point bits. The bits are made from blanks costing 2c. each and are heated, rolled, allowed to cool and then tipped with a thin covering of Haystellite. Labor and material costs of sharpening are respectively \$0.0130 and \$0.00385. Average output per bit is 6.546 tons.

Backward Bladed Fan

Old Ben No. 8 is ventilated by a Robinson backward-curved blade high-speed Timken-bearing blowing fan delivering 110,000 c.f.m. against a water gage of 3.5 in. The fan is powered by a 150-h.p. induction motor through a V-belt drive. Aircourses leading from a central fan location are kept uniform and adequate in cross-sectional area. There are one downcast and two upcast. Permanent stoppings along main aircourses are built of cement blocks filled with concrete. Temporary stoppings are built of ship-lap, frequently plastered. Overcasts, two at each cross entry, are constructed of I-beams with concrete walls and floors. Working places are examined by qualified inspectors immediately before men enter the mine.

The No. 8 preparation plant is in two parts. Primary separation is done in the main shaker section over a 10-ft. 90-r.p.m. shaker screen. Sizing and blending of minus 2-in. coal are done in a separate plant. The tippie has a capacity of 700 tons per hour and is arranged and equipped to wash certain sizes, oil and trademark all sizes, and to ship the many size variations in demand in today's critical markets.

From No. 8 and other Old Ben properties comes the widely known "Green-Marked" coal, "Green-marking" being a distinguishing Old Ben trademark. The color is imparted by spraying on a paint mixture developed, after much research, by a chemical concern closely associated with Old Ben. Distribution of "Green-Marked" coal is limited to those retailers holding a covering franchise from Old Ben.

Old Ben has contributed much in the way of safety to the industry. Few

are unacquainted with the achievements of John E. Jones, safety engineer, particularly those in dust control worked out jointly by himself and his company. Naturally, a perfect job of rock-dusting could be expected at Old Ben No. 8, and such is the case. In 1940, over 200,000 lb. of rock dust was applied by portable dusting machines, dusting being carried up to all room necks. In addition, thousands of bags of rock dust are individually suspended from crossbars and cap-pieces in back entries, crosscuts, inactive workings and other strategic points. Approximately 200 sacks are hung in each operating panel. Barriers of these bags are found in all room necks and in crosscuts in active panels. Each bag is supported on a wooden platform with an automatic tripping arrangement. Pressure of the moving air in front of an explosion wave moves a vane and trips the support, which drops down at one end to an angle of about 45 deg. As the support drops, rip wires sewn through the top of the bag tear it open and spill the dust into the air. This barrier, patented by Mr. Jones, is available to any who desire to use it simply by communicating with him.

The vital importance of safety is kept before employees at all times and each boss is expected to act as safety engineer for his own group of men. In addition, he is qualified to apply first-aid and, for the treatment of minor injuries, carries with him a pocket safety kit. Stretchers, blankets and portable first-aid cases are kept at vantage points.

Prevention, rather than cure, is stressed at Old Ben. The management

holds to the theory that if employees are profoundly safety-conscious fewer accidents will occur. For that reason, more time is devoted to teaching safety than teaching of first-aid. Safety meetings, which all employees are expected to attend and at which they are expected to speak freely on the subject of safety, are held each month. Specific accidents and hypothetical cases, at Old Ben and elsewhere, causes and preventative measures are discussed. Frequently, employees are assigned to present papers on certain accidents and on safety subjects.

Competitions for the best quarterly safety record are held between the four mines. Trophies and cash awards are presented at a dinner-meeting held once every three months. Moving pictures are shown and a speaker is brought in for the evening. Old Ben's safety program has borne healthy fruit. Accidents have decreased 66 percent in the last six years and the trend is definitely down.

Old Ben general and mine officials include: president, D. W. Buchanan; vice president and general manager, George F. Campbell; vice president, George Buchanan; vice president and purchasing agent, P. W. Beda; general superintendent, R. L. Adams; underground superintendent, Howard Lewis; superintendent above ground, A. W. Spacht; superintendent of underground maintenance, Frank Eubanks; chief engineer, J. W. MacDonald; electrical engineer, E. R. Lutz; electrical engineer, George Strunck; safety engineer, John E. Jones; mine manager, No. 8, Don Bowker; mine electrician, George Broadbent.

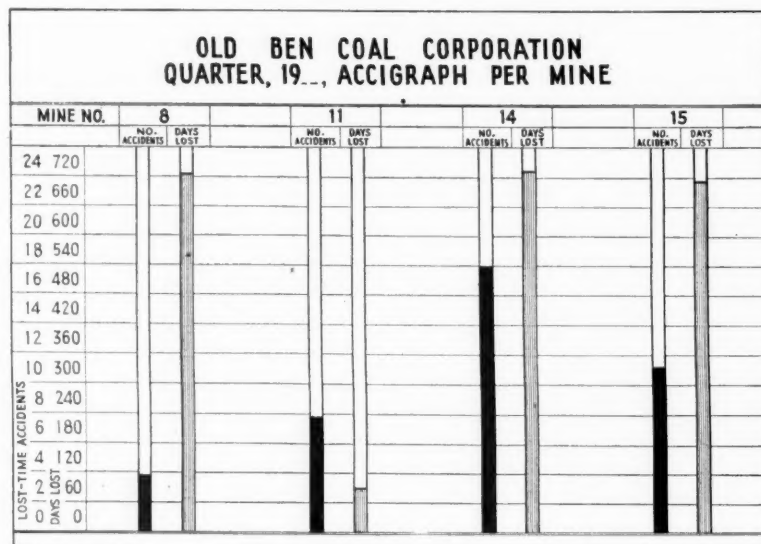


Fig. 7—Graphic accident record used at Old Ben mines.

EXETER COLLIERY

Mines Flat Beds by Conveyors

Retrieving Coal Which Earlier Had to Be Left

CONVEYORS are used extensively at the Exeter colliery of the Payne Coal Co., Exeter Borough, Luzerne County, Pennsylvania, south of West Pittston, a property leased from the Lehigh Valley Coal Co. In this mine most of the beds still remaining are flat and thin and only by conveyors can coal be profitably operated. When in earlier years the Lehigh Valley mined this property, no extensive work was done in the thin flat beds because their extraction, with the equipment then available, was too costly a proposition.

The shaft of the Exeter colliery, which is operated only for the upper beds, extends only to the Marcy seam, which it reaches at a depth of 377 ft. below the shaft collar, but beneath that seam is the Clark bed, 30 in. thick with three small easily separable dirt bands aggregating in thickness an average of about 2 in. and covered by a fine sandstone roof that is unusually and uniformly strong; none of this top is taken down in driving gangways. Fortunately, in the bottom rock below the Clark bed is an 18-in. seam at such a favorable level that the bottom of this coal will serve as the floor of the gangway, decreasing the difficulty of driving headings. As in their excavation 2 ft. of rock is removed, the gangways are 6 ft. high, with the coal seam at a level well suited to loading.

A slope 600 ft. long, dipping at an angle of 15 deg. has been constructed through the rock from the Marcy to the Clark, and this rock slope has been extended to the Babylon. This probably is the seam known in the Clear Spring, or Sullivan Trail, mine adjacent as the Lower Clark. It presumably is the same also as the Ross or

When the coal beds reach the Exeter mine they are nearly flat, for they are near the bottom of the basin. In earlier days they would have been mined by hand labor, loading directly into cars placed at the face. Not so today; shaker and chain conveyors are installed which move the coal uphill or downhill or a little of both. These carry the coal to belts which transport the coal to points where it is loaded into trips of cars. The Clark bed is so thin that, without lifting as many feet of bottom in the roadway as the coal is thick, the coal could not be mined, if it were not for mechanical assistance. And the coal would be shot to buckwheat, but for the undercutter.

By R. DAWSON HALL

Engineering Editor, Coal Age

Bottom Ross. This seam, already partly first mined and badly caved, has been developed, so that now it produces about two-thirds as much as the Clark.

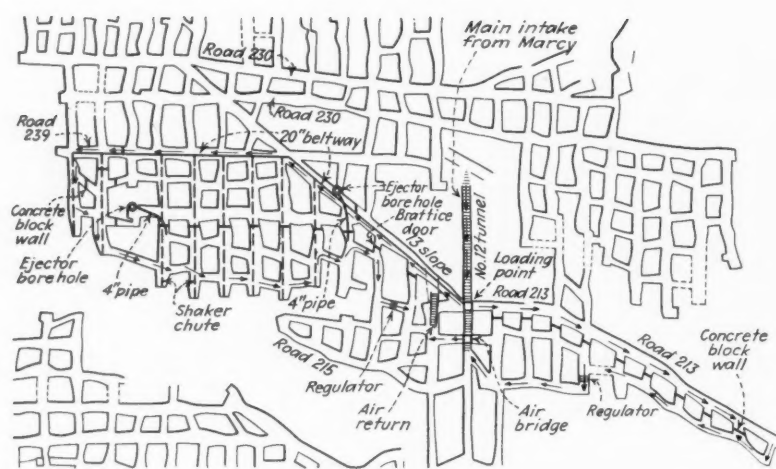
Under the Clark bed, as is general in the beds of the anthracite region, the rock is so hard that cutting in the material under the coal, even by a heavy high-powered machine, appears entirely out of the question, so the coal is undercut in a 9-in. bottom bench of coal close to the floor, using

five 50-hp. Goodman Type 412 permissible shortwall undercutters equipped with nine-position 60AJ chains with throwaway two-point bits which will cut without change ten 6-in. kerfs 30 ft. long to a depth of 6½ ft., where the standard bits would have to be resharpened. Speed of this new chain is 380 and of the feed 16 ft. per minute. This type of chain has been in use for two years. An advance of 7 ft. is made in each shift, and three shifts are worked daily, during which about four cuts are made.

Bits of standard type are used in the Jeffrey cutters. Use of undercutting machines, which has been restricted to the Clark and Babylon beds, has saved explosive and given a higher percentage of prepared sizes. Without such undercutting, operation of such thin seams would be out of the question. The Babylon bed is even harder to cut than the Clark.

After the coal has been drilled by a jackhammer and shot down by Monobel powder it is loaded by hand on a shaking conveyor, either Goodman, Vulcan or Eickhoff, or on a Goodman face chain conveyor which carries the coal to a room conveyor. There are 11 Eickhoff MTF-5 7½-hp. shakers, 29 Vulcan ET-0 10-hp. shakers and two Goodman G-15 15-hp. shakers, also one Eickhoff MW-8 10-hp. uphill unit, two Vulcan ET-1S 10-hp. uphill units and two Goodman E-11-70 10-hp. uphill units, or 47 in all. Face conveyors are four 40-ft. units 91-D-15 type with explosion-proof starters and motors, the latter of 3-hp. capacity. Five 350-ft. conveyors, 91-c-12 type, are used in rooms.

The shakers and room chain conveyors discharge onto one of four Goodman belts; two of these are 95-A-



Operations in Clark bed with locations of boreholes to remove methane from underlying Babylon bed.

20 units with 15-hp. drives with a capacity for extension to 1,000 ft. and two are 95-AR-18 units with a 10-hp. drives and with an extension capacity of 500 ft.

In some cases, shakers and chain conveyors are delivering direct to cars. At the loading points, rock has been lifted in the room mouths, and the transportation units are perched on crosspieces of plank standing on either side of the track. Here, the pans are extended so that they project over three or four cars and 9 to 12 tons can be loaded at a time with only one such placement. Where necessary, lags or riffle plates are spot-welded on the bottom of the pans so that the coal can be lifted where the inclination is not too steep. However, in many instances pans already riffled have been purchased from the manufacturer.

In one section of the Clark bed, where the seam is pitching from 6 to 16 deg., a level roadway in rock known as No. 12 tunnel has been

driven from the Marcy to the Clark seam, and a road, inclined about 10 deg. and 300 or 400 ft. long, has been driven in the Clark from this tunnel at a horizontal angle of about 30 deg. Here, one of the 20-in. belts has been installed to lift coal to the tunnel level, where it is loaded into cars and transported through the Marcy to the main shaft.

Another of the 20-in. belts brings coal to this one through a flat gangway running in the Clark on the strike and at right angles to No. 12 tunnel, passing under it, for the tunnel at that point is in the Marcy. From this flat beltway, rooms at 60-ft. centers, 30 ft. wide and 300 ft. long, have been driven up the pitch, which here rises at only about 6 deg. Coal in these rooms is not undercut but is brought down the rooms to the belt by 12-in. shaker pans. Pillars are cross-cut at 60-ft. centers.

Another of the 20-in. belts also is used in the No. 12 slope section of the Clark, where the coal bed is still

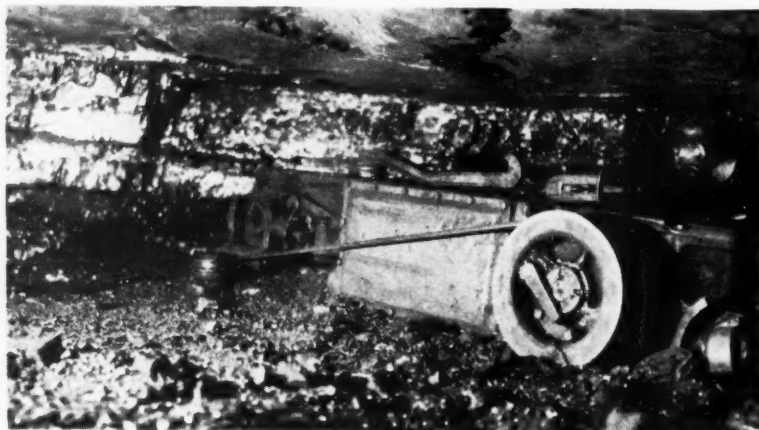
almost flat. Rooms are driven in this gangway in both directions at 60-ft. centers, 30 ft. wide and 300 ft. long, and the coal is cut entirely by short-wall machines. The rooms on one side dip 3 percent and those on the other rise 3 percent, but the coal in both directions is handled without difficulty by Goodman shakers. In the Babylon seam is another of the 20-in. belts similarly operated.

Operations in the Clark seam, at first, were troubled by methane coming from rooms in the Babylon seam that were extremely difficult to ventilate because of the heavy falls. This seam is 22 ft. below the Clark. As plans were on foot to divest the old Babylon workings of their pillars and then to develop operations in the large area of virgin coal still remaining, some means for ventilating this bed had to be devised.

Remove Gas by Borehole

The falls in the Babylon seam had reduced the interval between the workings in places to 15 ft., and probably creviced the unfallen rock, facilitating the escape of gas to the Clark bed. At a conference between Edwin Curtis, the mine inspector; R. L. Daugherty, the superintendent, and John Edwards, the mine foreman, it was suggested by Mr. Curtis that holes be drilled to the Babylon bed. All methane and air received from that seam was to be piped to the return of the Clark bed.

Accordingly, two 4-in. diamond-drill holes were sunk, advancing with 6-ft. lengths of pipe. To obtain for this drilling the necessary height, an excavation had to be made in the roof. One drillhole was sunk for the removal of methane and the other to provide air from the Clark bed to replace the firedamp as fast as it was removed, but it was found that the lower bed was not so closely caved but that, without creating a near-vacuum, it would pass sufficient air to permit removal of the methane. Both holes were in high points of the Babylon bed. Pipes were inserted in each of the holes, and an ejector, operated by compressed air and working on much the same principle as a steam injector, was provided



Undercutting the Clark bed 30 in. gross thickness.

at the top of one of the pipes. Through a 1-in. pipe, compressed air was delivered at 70 lb. per square inch to the ejector nozzle.

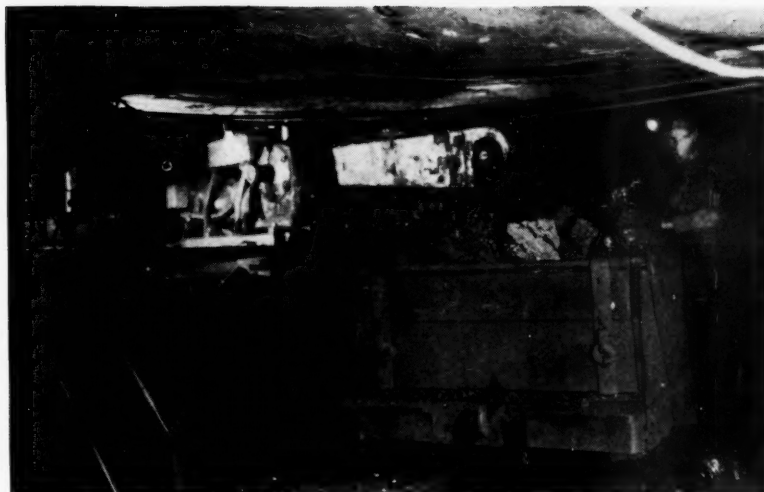
Air from the Babylon seam was conducted by a pipe to the Clark return. Without these provisions it would have been difficult to operate the Clark bed safely. An M.S.A. methane detector was used daily to ascertain the quantity of gas bled through the borehole. As development proceeded a careful check was made of the Babylon workings by an experienced man who made regular trips of inspection.

These precautions were taken until the air coming from the hole was found to be practically free of methane. No other holes accordingly were drilled and the pillars were removed. This method of removing gas applied, of course, only to the areas already first-mined. The workings later made in the solid are ventilated in the ordinary manner with headings for intakes and returns, with the usual crosscuts at intervals.

Haulage at Exeter mine is provided by ten combination trolley and cable-reel locomotives. About half of these are Jeffreys and half Vulcans. These units are supplemented by three 10-ton G.E. 809 trolley locomotives. The Babylon is being worked as an adjunct to the Clark and Marcy seams. Both the Clark and Babylon seams have much virgin coal.

Mined Coal Since 1871

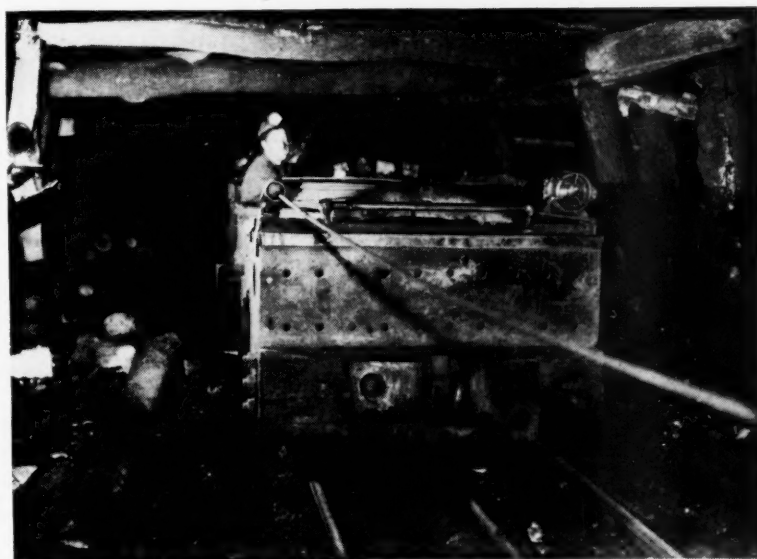
It was in 1871 that the forerunner of the Exeter shafts, the Knight shaft, was constructed. The Niagara shaft followed, but it never reached the coal. In 1872, the Exeter shaft was sunk, and the breaker constructed, the latter to be destroyed by a tornado in 1906, another breaker being built immediately thereafter. On Christmas, 1940, the old breaker burned down and the coal is now being transported in railroad cars to the Sullivan Trail breaker and there cleaned. The operation is in a sense in its seventieth year, yet it is going strong, producing 1,800 tons daily, and it has still many years before it, thanks to the introduction of conveying machinery.



Filling a 3-ton car in a gangway with a well-built topping.



From piles of large coal he has placed on the right the topper gets the chunks for topping his car.



Cable-reel locomotive gathering mine cars.

COAL—VITAL TO VICTORY

An Invitation

*From the
National Chairman*



TO MAKE possible the all-out production of ammunition, guns, tanks, planes, ships and countless other types of war material and supplies needed for the winning of this war there must be at all times an adequate supply and uninterrupted production of coal. The coal industry and the American Mining Congress have pledged themselves to work and produce for victory.

The present volume of production of coal should not blind us to the seriousness of the hampering and restricting effect upon future production which is steadily accumulating through the drafting of manpower for the armed forces; the general lowering of efficiency through the use of substitute, inexperienced and untrained personnel; the difficulty and delay in obtaining new equipment and supplies, and the difficulty of maintaining and repairing present equipment with scarcity of parts and eventual probable use of substitute materials.

In spite of these hampering conditions, more coal than ever before must be produced. How to accomplish this—how to get more coal with less efficiency, less manpower, fewer machines and less materials and supplies; and how to get greater productive efficiency from present machines and equipment; how to minimize wear and tear through better maintenance; how to cut time losses through quicker repairs; how to prepare for the use of substitute materials in repair parts—in short, how to do a better and more efficient job than ever before, is the problem of this coal convention.

It is thus not a "convention" in the usual sense. It is really a "clinic"—a place where coal producers and their production, engineering, maintenance and executive staffs on the one hand, and equipment manufacturers with their experts in design, construction and maintenance on the other hand can meet, sit around the table and discuss these vital problems for the mutual benefit of all.

The Exposition of Mining Equipment and Supplies, which has been an integral and very important part of our previous conventions, will not be held this year.



Blackstone

Although the value of this exposition to the coal industry and also to the manufacturers are fully recognized, it also was realized that in the interest of protecting the nation's coal needs, such mining equipment and supplies as were available for demonstration should not be kept out of the mines but instead should be put to work just as quickly as possible in the production of coal. The coal industry and the manufacturers were, therefore, quick to accede to the request of the War Production Board that this exposition be not held this year.

The convention itself, which will be held in Cincinnati, April 27 and 28, with its extensive and varied program of papers and discussions of up-to-the-minute problems of production, preparation, maintenance of equipment, loading and conveying, strip mining, safety and the specific national wartime problems of personnel, prevention of espionage and sabotage and of distribution, offers to all operating men throughout the industry faced with these common problems a forum and clinic for discussion and guidance, the importance of which is fully recognized by governmental agencies, the coal industry and the manufacturers.

It is hoped and anticipated that every producing company will have its key operating men attend this convention, join in the discussions of these important problems, and give their full cooperation and help toward their solution. The opportunity for assistance in many directions afforded by this convention is outstanding and should be taken full advantage of by all of us to the end that we may successfully do our part in producing for victory.

J. NOBLE SNIDER
*National Chairman, Program Committee
American Mining Congress*

PROGRAM

19th Annual Convention of Practical Coal-Operating Men

AMERICAN MINING CONGRESS

Netherland Plaza Hotel, Cincinnati, Ohio, April 27-28

MONDAY • APRIL 27 • MORNING

War-Time Personnel Problems

W. B. Geise, Susquehanna Collieries Co.

Prevention of Espionage and Sabotage

E. P. Coffey, Chief, Technical Laboratory, Federal Bureau of Investigation

MONDAY • APRIL 27 • LUNCHEON

Coal Production and Distribution

T. J. Thomas, Associate Director, Bituminous Coal Office of Solid Fuels Coordination

MONDAY • APRIL 27 • AFTERNOON

Duckbill Mechanical Loading

Paul R. Wickliffe, president, Greenville Coal Co.

Gathering Belts and Multiple Conveyor Units

E. H. Jenks, chief engineer, Rochester & Pittsburgh Coal Co.

Maintenance and Conservation of Equipment

Edgar Schweitzer, Lehigh Valley Coal Co.

Strip Mining Session

Primary and Tandem Dragline Operations

Lafe Stewart, chief engineer, Maumee Collieries Co.

Power Distribution and Protective Devices

Russell Alpine, chief electrician, Enos Coal Mining Co.

Drift Mining From Strip Pits

J. M. McCoy, Truax-Traer Coal Co.

TUESDAY • APRIL 28 • MORNING

War-Time Coal Preparation — Maintaining Quality Standards

W. D. Steels, preparation manager, Consolidation Coal Co.

Coal Drying and Other Auxiliaries of Preparation

James Hyslop, general manager, Hanna Coal Co.

ATTENTION—4th registration, Selective Service, April 27, men 44 to 65, not previously registered. Special draft registration facilities will be provided at the Netherland Plaza Hotel April 27 for convenience of mining men attending the convention. *Therefore you can register for the draft at the convention.*

Face Operations—Cutting, Drilling, Blasting

F. E. Snarr, mining engineer, Chicago, Wilmington & Franklin Coal Co.

Safety Session

Explosives—Handling and Distribution Underground

B. L. Lubelsky, engineering manager, Powhatan Mining Co.

Mine Ventilation and Sealing Abandoned Areas

Walter Buss, mining engineer, Knox Consolidated Coal Corporation.

Coal-Dust Allaying in Cutting, Loading and Transporting

J. C. Johnston, preparation manager, Koppers Coal Division, Eastern Gas & Fuel Associates.

TUESDAY • APRIL 28 • LUNCHEON

Priorities on Mining Equipment

Wilbur A. Nelson, Administrator, Mining Branch, War Production Board.

TUESDAY • APRIL 28 • AFTERNOON

Track-Mounted Loading Machines With Mine Cars

August J. Breitenstein, assistant mining engineer, H. C. Frick Coke Co.

Shuttle-Car Operation With Tractor Loaders

Arthur Phillips, superintendent, Peabody Coal Co.

Salvage of Scrap Metals

George T. Weymouth, Chief, Industrial Salvage Section, War Production Board.

Strip Mining Session

Shovel-Tooth Design and Maintenance

O. E. May, chief engineer, Northern Illinois Coal Corporation.

Strip-Mine Haulage

A. D. Henry, assistant superintendent, Jefferson Co.

MODERN LOADER MINING

With Shuttle Cars and Conveyor Puts Kentucky Truck Mine in Top Class

SHUTTLE CARS and a loading machine now handle the production at Moore Branch truck mine, the self-financed producer situated 20 miles airline from Ashland, in the northeast corner of Kentucky. From a scratch start in 1935 with a few mine cars and a pony, the enterprise has been built up by reinvestment of earnings in better and better equipment to a full-mechanical and completely electrified mine producing an average of 350 tons per day. By an unusual arrangement of working hours the mine is "one-and-a-half shifted." Since July, 1941, when the loading machines were installed, the labor has been governed by a contract with a unit of the United Mine Workers. For installation in areas where the seam is too thin for shuttle cars a new chain conveyor unit is already on hand.

In November, 1940, *Coal Age* carried a four-page article describing step by step the development of this Moore Branch Coal Co., which is owned and managed by George Stephens, whose residence and office are at Hitchens, situated on a branch line of the C. & O. Ry. seven miles by highway from the mine. Mr. Stephens, a confirmed believer in modern equipment but forced to start this mine with anything he could get, has replaced makeshifts just as soon as mine earnings have permitted.

The present tippie, fed by belt slope conveyor and containing shaker and vibrating screens, is the third at the site and the present steam power plant with d.c. generation replaced a diesel plant which in turn replaced a Packard automobile-engine plant that furnished electric power for the first cutting machine.

For the most part the seam thickness is between 50 and 60 in. Measure-

That a truck operation in a small isolated mining section of north-eastern Kentucky should be fitted with the very latest in modern electrical mining machinery, thereby eliminating hand loading and displacing time-honored gathering methods, calls for an explanation and it lies in these words: progressive management, good coal and favorable conditions. Step by step in less than seven years this mine has been lifted by its own earnings from a pony-haul truck bank to the ranks of efficient producers. Growing-stage used equipment that was not wholly satisfactory has been replaced as fast as earnings permitted.

By J. H. EDWARDS

Associate Editor, Coal Age

ments of 58 to 60 in. were recorded in the rooms where the drilling, cutting and loading photographs of this article were made. Except for occasional lenses of pyritic sulphur, the seam is clean. The coal is blocky; inherent ash, about 2 percent; the fusion temperature above 2,600 deg. F., and the volatile content about 37 percent. Favorable mining conditions include an excellent roof, for the most part without drawslate, a hard bottom, cover not exceeding 300 ft., generally level haulage and no difficulties from water and gas.

Of an available initial acreage of 873, over which Mr. Stephens now

owns a two-thirds interest in the mineral, it is expected that the favorable conditions will be enjoyed over a large part of the area although in spots drawslate up to 4 in. has been encountered and in a few places the seam thins to 30 in.

At the tippie, which is near the center of the property, the cover is but 50 ft. and the seam outcrops at points some 3,000 ft. distant. General dip is 3 percent to the east and none of the few local grades encountered exceeds 10 percent. In December, when the accompanying underground pictures were made, the production, all by loading machine and shuttle cars, was from an outcrop section with a 400-ft. maximum shuttle-car haul and a 3,500-ft. locomotive haul to the dumping point at the slope bottom.

Typical of the whole job is the slope and its belt conveyor. That method of dumping and delivery to tippie was recognized as best, so it was installed, even though the available money dictated the purchase of a used belt as the initial or temporary installation. That original belt, however, has since been replaced by a brand-new Good-year belt—30 in., 5-ply, 28-oz., $\frac{1}{8}$ - and $\frac{1}{16}$ -in. rubber faces and of length suited to the 130-ft. centers-distance conveyor.

Underground employees numbered about 80 with hand loading, which was terminated in February, 1941, beginning with a labor dispute (the mine had been operated non-union). The new start with union labor and mechanical loading was made July 7, 1941. In October the mine operated 306 hours and produced 7,932 tons. Corresponding figures for November were 268 hours and 7,814 tons. Including the mine foreman, there are normally 24 underground employees.



Stephens, Stephens and Stephens. Oscar (left) and Ike are the loader operators and George (right) is owner of the mine.

In the power plant, tipple and general outside work, not counting trucking, the number of employees is ten.

Additions to underground equipment during 1941 were as follows: Joy 14BU-3PE loader; two Joy 3½-ton 32D4P shuttle cars with Edison batteries, two extra sets of batteries (Edison C5, 80-cell, 96-volt, 281-amp. hr., 27.04-kw.-hr.); resistance charging equipment; Joy PL11-2E elevating conveyor; Joy T-2-4E caterpillar truck for Goodman 112AA shortwall having 8-ft. bar; Prox chain and throwaway bits for shortwall; General Electric 5-ton cable-reel locomotive; and one Jaeger hoist for car spotting. All of the Joy equipment is of permissible type. Also, from the Jeffrey Manufacturing Co. there was received late in the year (not installed at the time of this writing), for entry driving and the mining of low coal areas, a new 300-ft. 61-AM chain conveyor with Westinghouse 10-hp. SK motor.

Rooms are advanced eight abreast 25 ft. wide on 45-ft. centers and 300 ft. deep to the next inby room entry. From a new shuttle-car dumping point (elevating conveyor set-up) established there, the room advance is continued another 300 ft. to a barrier pillar, which is left and a new advance of rooms begun at a room entry beyond.

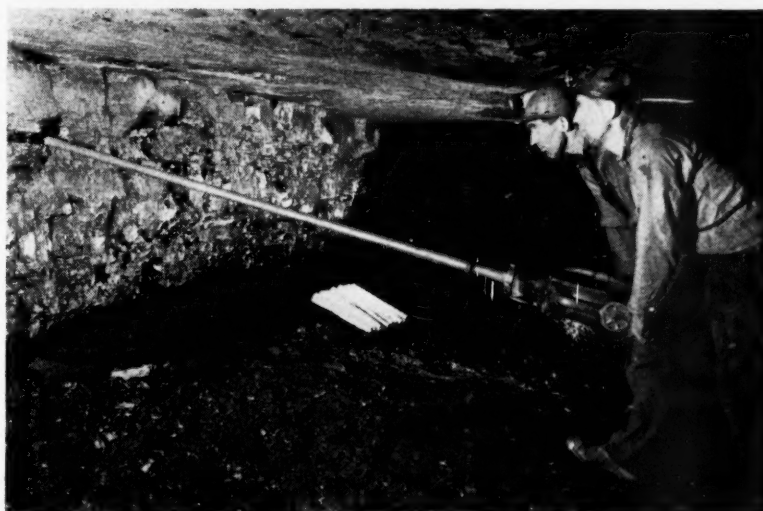
By this plan each elevating conveyor set-up will handle the tonnage from eight 300-ft. rooms and the maximum shuttle-car haulage will be 480 ft. At the time of this writing the elevating conveyor was working at its second set-up, but lengths of some of the rooms served therefrom were limited by proximity of the crop line. Average shuttle-car haul was 300 ft. and production was coming from twelve working places.

Cutting is done by a contractor employing one man and for the most part they work at night. Other night work is the dusting of undercuts by one man and the drilling and shooting by two

others. Ten men, including the foreman, is the normal day crew, with duties as follows: loader operator, loader helper, general clean-up man, elevator man, two shuttle-car drivers,



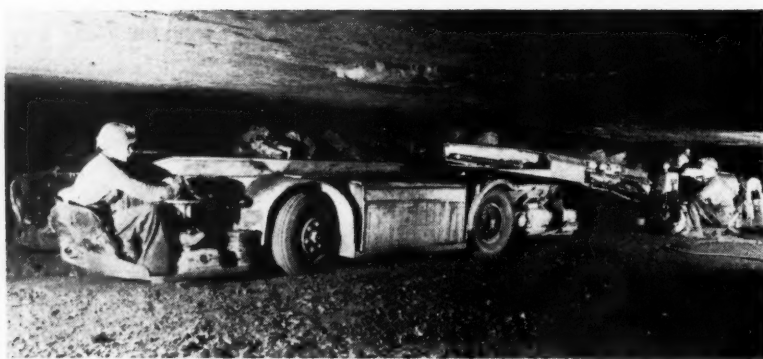
The undercutter is hauled on a self-propelling caterpillar truck.



Drilling is done with new type safety drill having counter rotation bits.



Loading the blocky coal.



Shuttle car being loaded in a 25-ft. room.



At shuttle-car dump point elevator, Geo. Stephens, owner, watches the loading.



Mine Foreman George Wagner (center) looks on while loader operators like Stephens (left) and Oscar Stephens, brothers of the owner, lubricate the loading machine with a new air-operated pressure gun.

one motorman handling the track haulage and two dumpers at the slope bottom.

One crew of nine men starts work at 7:15 a.m., lunches from 11 to 11:30 and quits at 3:45 p.m. Another crew of the same number starts work at 12

noon, lunches from 3:45 to 4 and quits at 8:30, when mine operation ceases. Thus both crews are on duty at the same time during the hours from noon to 3:45 p.m. Track work, timbering (very little required in the mine), greasing and all such miscel-

laneous jobs are done by the extra men during this overlap period.

Mine operations continue for five days of 12¼ hours but on Saturday the total operating time is 8 hours. The day shift is floated but the night shift is not.

A battery with its full charge lasts for 8 to 12 hours of shuttle-car service, depending upon grades and other conditions. The four batteries are charged at night through resistances from the 250-volt trolley power. Although the power lost in these resistances, cutting from 250 volts to the 160 volts maximum required for charging, adds little to the power-plant operating cost, the drain on the line does adversely affect the voltage delivered to the cutting machine and for that reason Mr. Stephens is considering a motor-generator charger as the next step in equipment improvement.

The 70 mine cars which were used with hand loading afford a comfortable surplus with machine loading. These cars, holding 1½ tons, have wooden bodies and anti-friction bearings. Track gage is 36 in. and the rails are 25-lb.

In addition to the machinery in regular operation in the mine the complement of equipment now includes several spare items; specifically a Goodman 112AA cutter, one 4-ton locomotive, one 4½-ton locomotive and at this time there is now on hand for installation at the power plant a second Ridgway 150-kw. engine-generator.

Some Coal Shipped by Truck

Of the 7,814 tons produced in November, 1,800 tons, or 23 percent, was shipped by rail from a ramp and platform loading station at Hitchens. The coal company operates seven 1½-ton motor trucks to haul this tonnage plus some tonnage sold to a General Refractories plant in the same town.

More than 50 percent of the mine production moves by cash-and-carry truck sales to the tobacco district of Kentucky and to southwestern Ohio. During the slack spring months in years prior to the 1941 shutdown as much as 3,000 tons of plus-6-in. lump has been stored at the mine ready for the season of peak demand.

Other 1941 improvements included a bath house, installation of 40 Edison-MSA electric cap lamps and the purchase for tippie yard purposes of a new Barber-Greene 30-ft. self-propelling electric stocking and loading conveyor with an 18-in. belt.

TRANSFER TRUCKS

Can Save Face Operating Time And Cut Cost of Shopping Loading Machines

EXPERIENCE at the Zeigler No. 1 mine, of the Bell & Zoller Coal & Mining Co., Zeigler, Ill., has shown that, at many mines, special trucks to haul loading machines to and from the shop would be desirable equipment. The first transfer truck was installed in Zeigler No. 1 over ten years ago. This equipment now saves more than \$1,000 a year by increasing the operating time of machines and decreasing the labor involved in moving them from face to shop and back again.

The main repair shop at Zeigler No. 1, 400 ft. underground off the shaft bottom, is distant from the working face an average of three miles. Thus, when it is necessary to send a loading machine to the shop for major repairs, how to get it there quickly is a difficult problem. To move it this distance under its own power would require three hours. Should motor or tramping gear be crippled, dragging the machine over so many miles of track not only would subject the caterpillar treads to needless wear but also would require at least 3 hours—usually more. With a transfer truck, however, the machine time can be cut in two and the machine moved in 90 minutes.

With the truck standing 10 in. above the rail, a Joy 11-BU loading machine,

By **ERNEST PRUDENT**

*Chief Electrician, Zeigler (Ill.) No. 1 Mine
Bell & Zoller Coal & Mining Co.*

as shown in an accompanying illustration, will need 64 in. of headroom when thus loaded. A second illustration shows the safety lock which holds the 10-ton machine securely and prevents any shifting on gradients. These locks were built of welded scrap material.

Cost of the truck, built at the mine from materials on hand, is \$165, including the 7-in. wheels, which were cast at a foundry. The maintenance department now has two of these trucks. A loading machine is kept on one of them all the time, so that it immediately can be sent inside to replace an incapacitated unit.

Without the transfer truck, a relief machine could not be taken inside during the hoisting period, as it would block the haulage system which has to serve from four to seven loading machines. For this reason, it would be more economical to permit the crew of the disabled machine to be idle the rest of the shift than to cut off or decrease the supply of cars to the other units and thus halt or slow up

their work. With the transfer truck, however, the main-line trip can be followed by a relief machine and arrive at the inside parting or sidetrack with no interruption of haulage.

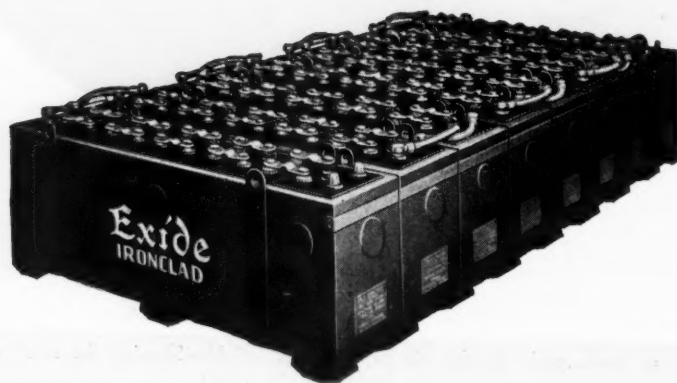
By the use of these trucks, great savings are realized. In 1940, based on the average production of all the machines in the mine, each minute of machine-operating time resulted in an output of 0.8 ton. With an average production cost of \$1.08, each loading machine in that year had an average earning power of \$0.87 per minute. The figure for 1941 is even higher. At No. 1 mine each year occur an average of twelve shop jobs in which it is necessary during a hoist period to move a relief machine to the working face. By using the transfer truck, no other mine operations are disrupted, and the job takes but 1½ hours.

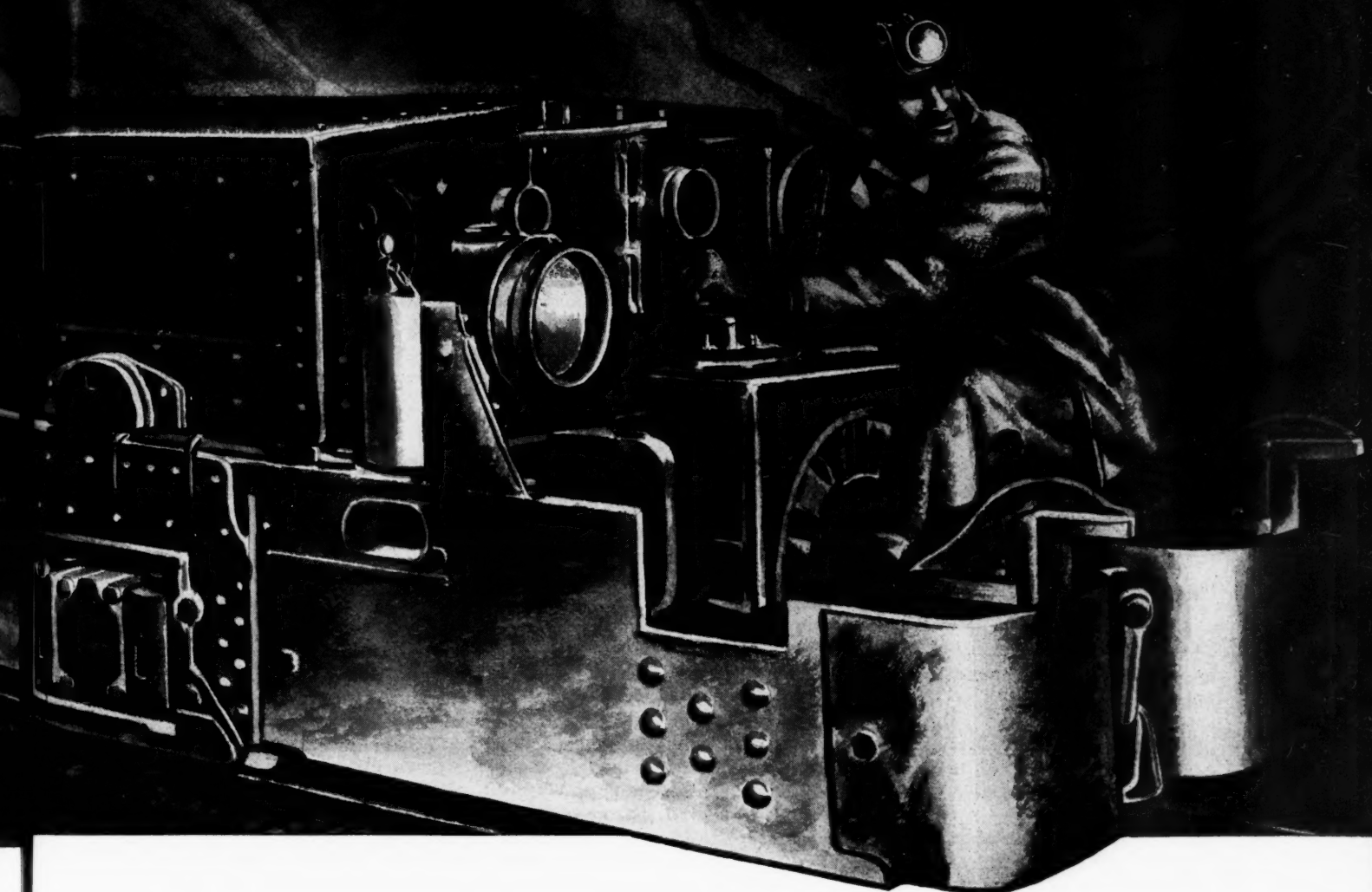
Thus, if there are twelve shop jobs to be handled during the hoisting period per year without the transfer truck, a loss of 36 hours of production (three hours per machine) would be entailed. With the truck, the loss is 18 hours (1½ hours per machine), a reduction of 50 percent. The saving of 18 hours, or 1,080 minutes, of potential producing time, at the 1940 earning rate of \$0.87 per minute, results, in the course of the year, in a total



Left—Loader on truck ready for the trip to the shop. Right—Showing the safety lock which holds the loader on the truck.

**"HELP
WANTED"**
and Exide answers





NO weaklings are the men whose work in mines and open pits forges the steel sinews for our war machine. They're getting out coal and ores in tremendous quantities . . . but they need every ounce of help they can get. No sissies need apply for the job.

Exide-Ironclad Batteries provide power in mechanized mines from coast to coast, in storage battery locomotives and shuttlecars. Their surging strength moves heavy loads on heavy grades . . . by delivering its current at high voltage.

Underground, more Exide-Ironclads are used than all other makes of batteries combined. Underground, as everywhere, Exide helps *Keep America Rolling*.

Exide
IRONCLAD
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

The World's Largest Manufacturers of Storage Batteries for Every Purpose

Exide Batteries of Canada, Limited, Toronto

production saving of \$939.60. Moreover, the time spent by maintenance men in taking in relief machines is reduced from 36 hours (or more) at \$2 per hour to 18 hours at the same rate, saving for the year \$36 more.

Besides the twelve shop jobs per year that must be handled during the

hoisting period, each of our loading machines averages one trip per year to the shop either on an idle day or during the night shift. As 20 machines are in operation, bringing them to the shop by any other means than by the transfer truck would cost \$120 (60 hours at \$2 an hour). With the truck,

the time is cut to 30 hours, making the total cost, at \$2 an hour, \$60. Hence a further \$60 is saved.

Thus, conservatively speaking, these trucks save \$1,035 per year. They have been in service over ten years and upkeep cost has been practically nil.

NEW SHOVEL AND TRUCKS

And Dragline From Old Shovel

Mark Changes at Fidelity No. 11 Strip Mine

TO ASSURE ample coal for its regular customers and defense needs, the United Electric Coal Cos. has completed several important changes at its Fidelity No. 11 mine, five miles west of DuQuoin, Ill. The major changes affecting production and cost consist of the addition of a 30-cu.yd. stripping shovel, installation of a truck haulage system in No. 1 pit, and conversion of an existing shovel, heaviest of its type, to a dragline excavator.

When Fidelity was opened, in 1928, it was equipped with the most modern machinery then available. This included two Marion 12-cu.yd. stripping shovels, with two Marion 10-cu.yd. draglines to work in tandem with them, and a Marion 5600 shovel weighing 1,750 tons and carrying at that time a 15-cu.yd. dipper. It has now been converted to a dragline, but still is the heaviest dry-land excavator ever built.

The facilities also included standard-gage rail haulage from pit to tippie, using Heisler articulated steam locomotives with traction on all eight wheels, and American Car & Foundry 40-ton drop-bottom cars with Timken-bearing journals. With the exception of the haulage and a 2¾-cu.yd. diesel dragline for ditching, the entire plant is electrified with power from the Illinois-Iowa Power Co.

With the passing of years, high-tensile abrasion-resisting steels were

developed for use in dippers and buckets, increasing capacity with the same or less weight. Improvements in teeth made it easier to pull the lighter dippers through the bank. These developments increased the capacity of stripping machines and resulted in widespread dipper changes.

Taking advantage of these advances, Fidelity replaced 10-cu.yd. buckets with 12-, and 12-cu.yd. dippers with 15's. Later, in 1938, it was decided to follow through with changes on the 5600. The final decision was 26-cu.yd. dipper. To facilitate handling it, the dipper stick was shortened a little and the hoist-gear ratio changed. These alterations brought the 5600 almost in line with the modern 30-cu.yd. machines which had been in use three or four years.

Before the close of 1940 it was apparent the need for more coal and the gradually increasing depth of overburden called for more equipment and for some modification in methods. It was then that the changes listed in the first paragraph were decided upon.

The first new unit in service was a Bucyrus-Erie 950-B stripping shovel with 30-cu.yd. dipper. One of the second edition of that line of electric shovels, it is built on the same general lines and retains the individual motor-driven crawlers, automatic leveling, hydraulic steering, round dipper stick, counterbalanced dipper, rope-driven crowd and deck-mounted crowd motor.

The outstanding change is in the boom support. The lower boom half is featured by a rigid triangular steel-beam construction. The upper section is hinge-mounted at the lower end, with the upper end supported by eight steel cables—four on either side. These are attached to the top of the "A" frame, where they are set apart to serve as boom stays. Each set of four cables is clamped together at several points to prevent slapping.

Another mechanical change is use of a disk-type clutch on the intermediate shaft of the crowd gear train. Gear inclosure is retained in this model wherever it was provided in the earlier model.

Electrically, the principal change is the use of two hoist and two swing generators. These, together with the crowd generator, exciter and driving motor, make an m.g. set of seven units. This division of power keeps the d.c. voltage down to 250 for all shovel-operating generators and motors, reducing the chance of flashover. Another change is stepping up the speed of the m.g. set from 1,200 to 1,800 r.p.m., reducing weight and, perhaps, cost. All machines in the set are equipped with ball bearings. This electrical apparatus was designed and built by Westinghouse.

Forced ventilation by motor-driven blowers cools all motors powering shovel motion. Air is taken from under the cab. The fan effect of the



At the left the grader spreads base material for the truck road while the mixer turns out more. At the right is the completed outbound road.

rotors of the m.g. set provides cooling for its machines. An exhaust fan in the cab wall above the m.g. set drives the heated air out of the cab.

The trailing cable is 1,000 ft. of Simplex 2/0 3-conductor Type SH-D with both ground wires and a copper shield for each conductor. These provide conducting capacity to carry fault currents, protection of the rubber from corona, and safety for men who must handle the cable.

The principal physical shovel features are: dipper capacity, 30 cu.yd.; working weight, 1,300 tons; boom length, 108 ft.; dipper-handle length, 70 ft.; dumping height, 73 $\frac{1}{4}$ ft.; crawler length, 20 ft.; tread width, two per crawler, 3 ft.

The 950-B unit requires only a 1,000-kva. motor to handle a 30-cu.yd. dipper. Much of the power economy of the later design is attributed to the counterbalanced dipper and to the lighter front end. The heavy balancing weight at the rear of the cab lops off high power peaks and makes unnecessary regenerative lowering of the dipper.

With first-class rail haulage at Fidelity and successful truck systems at other United Electric mines, it was not falling for a fad that brought truck haulage to the No. 1 pit at Fidelity. The truck proved its case elsewhere and now must justify at Fidelity against the rail-equipped No. 2 pit.

Just as good track is the first essential of rail haulage, good roads are of first importance in truck haulage. That is the basis on which Fidelity tackled the job. From the foot of the ramp leading into the pit the road is a loop to the dump hopper at the washer. The loaded, or inbound, section of the loop is 3,900 ft. long, with a somewhat shorter empty, or outbound, section. The load section is heaviest built because of the weight carried. The loop avoids traffic interference and eliminates the dust hazard when passing.

Maximum grade against loads is 1.6 percent.

The inbound section is 30 ft. wide with a 6-in. house-top crown. It consists of a sub-base, base, and top, or sealcoat. The sub-base is made up of washery water and oil supplied by Bitucote Products Co. The mixture, put through a Barber-Greene mixer, was left on the roadway in windrows and spread with a grader. A "sheeps-foot" was then used to compress this mass, followed by a 5-ton roller to further compact and smooth it. Thickness of this sub-base varied from 13 to 24 in., depending on the condition of the sub-grade.

The second layer, or base, is stabilized Bitucote made of gob, 15 percent clay, water and the same oil used in the sub-base. This was subjected to identical mixing, spreading and compacting. This layer is 6 in. thick.

The top coat consists, first, of a

heavy spray of emulsified asphalt from a tank truck, followed by a $\frac{1}{2}$ -in. layer of $\frac{1}{4}$ x $\frac{1}{2}$ -in. stone chips. This was rolled down and followed with a similar layer of asphalt and chips, also rolled. This sealcoat renders the road impervious to water.

The outbound section of the road is approximately 24 ft. wide. Its construction is similar to the inbound section except that the central layer, or base, is omitted.

The truck fleet consists of ten Autocar tractors equipped with 150-hp. Cummins diesel engines. The trailers are made up of 25-ton Gar-Wood side-dump bodies mounted on Fruehauf running gear and operated by Wood hydraulic dumpers. Engine speed is 1,800 r.p.m. Fuel-oil consumption is 15 to 20 gal. per 7-hour day. The transmission has a high and a low speed range, each with four speeds ahead. The two front tires are



New 30-cu.yd. shovel in action at Fidelity.



Loading new tractor-trailer units in No. 1 pit.



Haulage unit dumping coal into washery hopper.

12.00x24. The remaining eight are 14.00x24. An air pressure of 75 lb. per square inch is carried on all tires.

These trucks deliver about 6,000 tons per day. Average pay load is approximately 23 tons. Daily mileage varies widely, as the round-trip distance varies from 1.6 to 5 miles.

Since the truck installation was completed, mine production has increased materially. Peak production has reached 7,685 tons in a 7-hour day. Haulage cost per ton is said to be well below rail haulage.

Total time out for emergency servicing of the whole fleet has averaged 5½ truck-hours per month. Trucks are checked and greased every night. It is standing routine to correct every case of trouble as soon as it appears. Whenever tires are snagged they are

removed and repaired immediately.

The shop force consists of two mechanics, one maintenance man and three greasers. Adequate facilities are provided in the 90x100-ft. steam-heated steel garage, which includes office equipment for keeping records. In addition to the coal trucks, this shop force services five tractors, six company trucks, one road machine and one 2¾-yd. diesel dragline. A total of 39 internal-combustion engines are under its care. The fuel oil, lubricating oil and grease for the haulage trucks is supplied by Ohio Oil.

As stated, the 5600 was the only one like it, and its construction in 1928 made possible the test of actual operation responsible for many of today's shovel advances. Some of the principal

dimensions of the 5600 were: cab, 30x60 ft.; boom, 120 ft.; dipper stick, 83 ft. Original dipper capacity was 15 cu.yd. The crawlers were 6 ft. high and the weight is 1,750 tons. The operating cycle from beginning of bite, dumping and back, was 50 seconds. The electrical equipment was designed by General Electric and built especially for the 5600. The main motor, driving the hoist, swing and crowd generators, is a 4000-volt synchronous machine rated at 1,700 kva., 80 percent power factor. The hoist motors are 350 hp. each. The trailing cable is 4/0. In 1938, as previously described, the original 15-cu.yd. dipper was replaced with a 26-cu.yd. light-weight unit.

Since its beginning, in 1928, Fidelity has used draglines in tandem with its stripping shovels for economical removal of deep overburden. The purchase of the new 30-cu.yd. shovel left no dragline running mate for either it or the 5600. To remedy that situation, the 5600 was converted to a dragline with a 20-ft. boom and a 20-yd. bucket.

To control the boom weight, the legs are made of heavy angles, while the cross and diagonal members are made of pipe. It was built in sections at the factory. The assembly of the individual sections is by arc welding. The several sections are bolted together by flanges welded to the connecting members to make the complete assembly. Auxiliary supporting ropes, attached at two intermediate points, prevent the vertical whip that tends to manifest itself in long slender booms of this type. The base is spread so wide there is no lateral whip. The 20-cu.yd. bucket is handled by a 2¾-in. drag rope and a 1½-in. hoist rope, with a 1½-in. rope for boom-hoist service.



The new 20-cu.yd. dragline in action after conversion from a 26-cu.yd. shovel.

NEW UNDERGROUND SHOP

Of Consolidation Mine No. 93

Typifies Importance of Machine Maintenance

SUCCESS with mechanical loading calls for the best in preventive maintenance and that requires thoroughly trained and adequately supervised mechanics working with good tools and the best in shop facilities. As a service station for mobile loaders, cutting machines and locomotives, a new underground shop in Mine No. 93, a 3,400-ton mine of the Consolidation Coal Co. at Jordan, W. Va., includes every feature recognized as desirable for cleanliness, thoroughness and safety in maintenance. This new shop, under 300 ft. of cover, is $3\frac{1}{2}$ miles from the drift portal of the main haulage and displaces an outside shop which served the mine during hand-loading days.

Installation of mechanical loading in this 8-ft. Pittsburgh-seam mine in Marion County, seven miles down the Monongahela River from Fairmont, was completed in December, 1940. Principal underground equipment maintained in the new shop consists mostly of crawler-type loading machines, track cutting and shearing machines equipped with mounted coal drills, 6-, 7- and 8-ton gathering locomotives and 10- and 13-ton tandem main-line locomotive units.

All inside equipment at this mine is operated on 275 volts d.c. As the mine is on a five-day-per-week working schedule, Saturday is the big day in the underground shop. On this day the multiple-shifted units are brought in for weekly inspection and for the preventive maintenance jobs which those inspections may reveal. All units are on either a double- or triple-shift basis.

The shop is about 500 ft. from the bottom of a 253-ft. airshaft having a stairway and at the top of which is a two-unit full-automatic d.c. substation

with start and stop control station underground. This proximity of the maintenance headquarters to the power-supply station, to its control and to automatic feeder breakers near the shaft bottom has well recognized advantages. The mine is gaseous and the entire shop layout emphasizes the safety features of fire prevention and proper ventilation.

Floor space of the main shop room, 29x114 ft., together with that of three auxiliary rooms totals 4,306 sq.ft. The crane bay, 85 ft. long, has a ceiling height of 16 ft. and a clearance of $10\frac{1}{2}$ ft. below the bridge of the traveling crane. Toward the back end of the shop, under the two mine tracks, is a pit 17 ft. long with access by a stairway between tracks. Appropriately the oil room, 10x24 ft., is close inby of the shop entrance. A room 10x38 ft. opening off the same side wall but midway of the shop length houses a work bench and steel lockers. Another room of the same dimensions but at the back end of the

shop is the supply room and office of the maintenance foreman. Ceiling height in all three of these wing rooms is 8 ft.

The entire shop is served by one entrance which is equipped with heavy wire-mesh doors that can be locked. Partitions between main room and supply and locker rooms are of the same heavy wire mesh and include locking doors. A hollow-tile wall with a $\frac{1}{8}$ -in. steel-plate door separates the oil room from the main shop. This door is of the gravity closing type normally held open by $\frac{3}{8}$ -in. sash cord and fusible links strung along the ceiling over the oil container. At the back end in each auxiliary room is a 3x7-ft. steel exit door which can be opened only from the inside.

Construction of the shop is entirely of fireproof materials and that includes bins in the supply room. In addition to the usual cubical steel bins the equipment includes three eight-tier rotary bins which solve the problem of separate storage for the numer-



Looking into the shop from outby the entrance, which is equipped with wire-mesh doors.



Looking toward entrance door; bridge crane is in background, ventilating pipe at upper left, and entrance to bench and locker room is in center of wall at left.

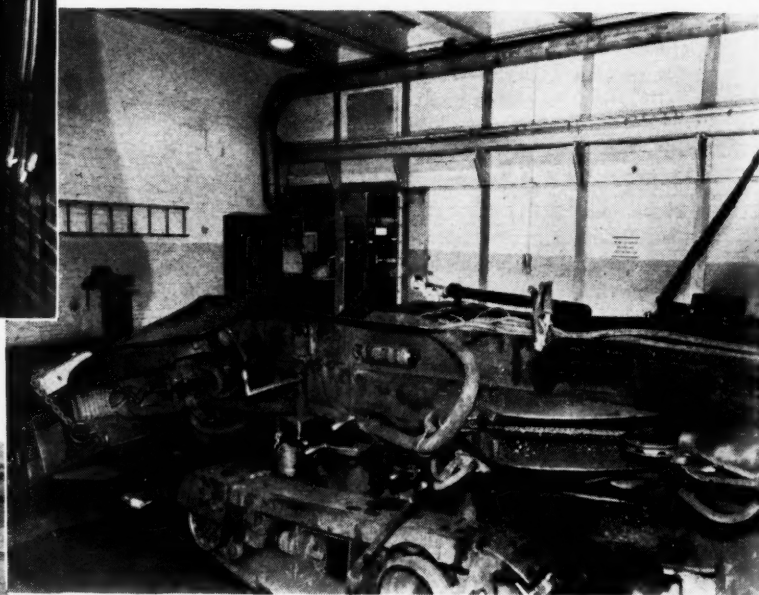


View from main room looking through gravity fire door into oil room.



Supply room as viewed from door connecting with shops. Hydraulic hose spares hang at right and rotary bins appear at left.

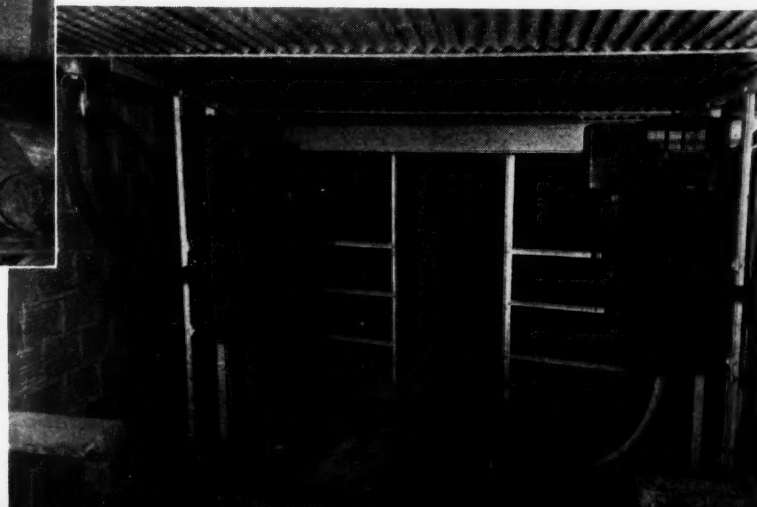
Loader on repair pit, and over back of it appears the entrance to supply room and the 12-in. duct which pulls air from ceiling of main room.



Automatic breakers, one 2,000-amp. and another 1,600-amp., near the underground shop and feeding separately main haulage and working sections.



Flameproof cable-reel locomotive undergoing weekly inspection. Entrance to work bench and locker room in background.





John Kinney, mechanic, prepares to spot-weld the terminal bolts after installing a replacement tube in a resistor of the 6-ton flameproof locomotive.

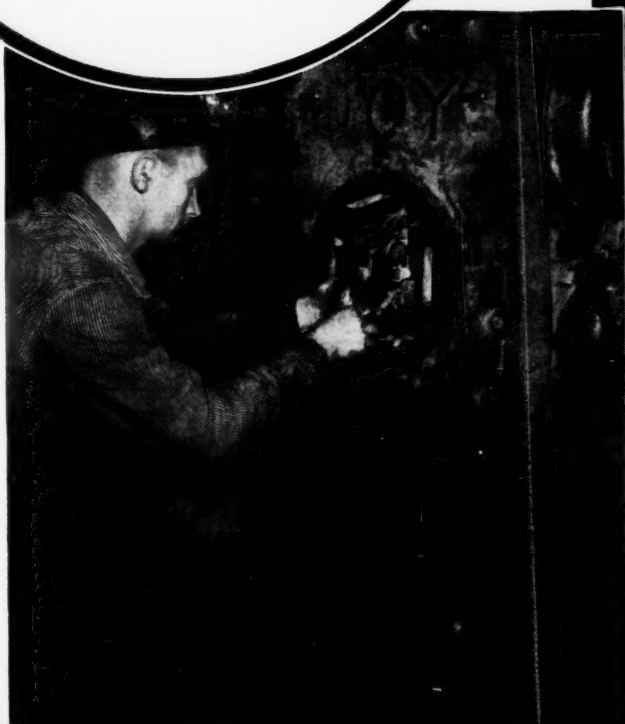


Mechanic Ross Morse applies through bolts in place of original cap screws to improve security of trolley-pole base on an 8-ton locomotive.



Here the flameproof controller of a 6-ton cable-reel locomotive is being inspected by Mechanic Russel Morris.

Snapped
on a Saturday morning
in the new shop and typical
of the weekly routine
of inspection and
repair



John McKinney, mechanic, prepares to spot-weld the terminal bolts after installing a replacement tube in a resistor of the 6-ton flameproof locomotive.



Mechanic O. A. Noe dresses the contacts in the permissible controller of a loader.



At bottom of airshaft, three 1,000,000-cir.mil positive cables merge into two 1,500,000-cir.mil armored cables feeding two automatic breakers 110 ft. away. The negative is made up of six 500,000-cir.mil bare cables.

ous small items that take but little space.

Walls of the main room are hollow tile between columns on 5-ft. centers and consist of steel H-sections surrounded with brick at the back and sides. Walls of the wing rooms are solid brick and they provide the support for the roof. All ceilings are steel-supported and the lagging consists of corrugated galvanized sheets. In the main room the cross supports, on 5-ft. centers, are 21x9-in. 103-lb. H-beams resting on the H columns. Joists on 18-in. centers are 3-in. 5.7-lb. I-beams.

Air enters the shop by the main door and leaves through 18x18-in. ventilators at the back ends of the auxiliary rooms. These ventilators have outside adjustable covers and inside gravity covers, the latter held open by fusible links. As an added precaution a 12-in. sheet-metal pipe was installed from another ventilator in the back end of the supply room and to the ceiling along the full length of the high crane bay section.

Twelve 300-watt mazda lamp units above the crane provide general lighting for that part of the shop. With the high reflection from white paint on the ceiling and on walls down to within 5 ft. of the floor, these provide adequate light for most jobs. The units are controlled in groups of two from switches 15 ft. apart on the right-hand wall and each switch box includes a receptacle for an extension cord. Several receptacles also are provided on the opposite wall.

Shop equipment does not include

machine tools such as lathes and shapers because the mine is one of a group of seven of the West Virginia Division for which the company operates at Monongah a central repair shop for machine work, electrical winding and unit repair and assembly jobs. Operating officials of this division of the company are L. H. Schnerr, manager; G. O. Tarleton, assistant manager, and George Henderson, maintenance superintendent.

The new preventive maintenance shop in No. 93 mine has the following equipment, all of which was purchased new for the job: 10-ton manually operated bridge crane, 25-ton hydraulic press of the vertical type, 12-in. drill press, 12-in. two-wheel grinder, 300-amp. Flexarc welder powered from 275 volts d.c. and mounted on a shop truck of plain steel wheels, and acetylene torch equipment with tanks on a rubber-tired shop truck.

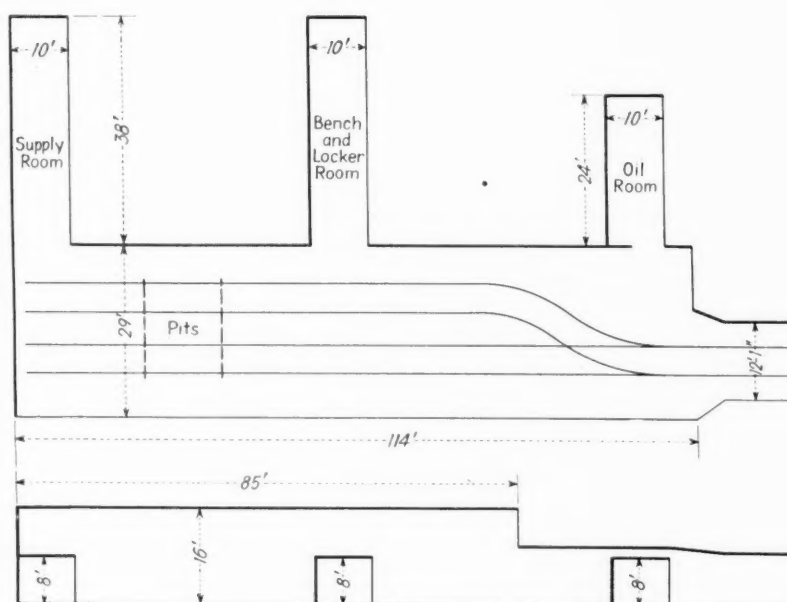
Most of the mechanics working on maintenance in the No. 93 mine have attended a maintenance course given by the extension department of West Virginia University at the Monongah shop of the Consolidation Coal Co. A loading machine and assemblies were made available for the use of the class in this instruction course and the instructor in charge is D. A. Maurer, assistant division maintenance superintendent of the Consolidation Coal Co. (*Coal Age*, December, 1941, p. 114). Excellent equipments of personal tools such as complete sets of alloy-steel socket and box wrenches are owned by the mechanics in No. 93 mine. The thoroughness learned in the maintenance course and the ade-

quate steel lockers provided in the new shop have had a marked effect in encouraging the men to secure adequate personal tools, without which efficient maintenance is impossible. The coal company provides in the shop special tools required for jobs peculiar to the particular types of equipment used in the mine.

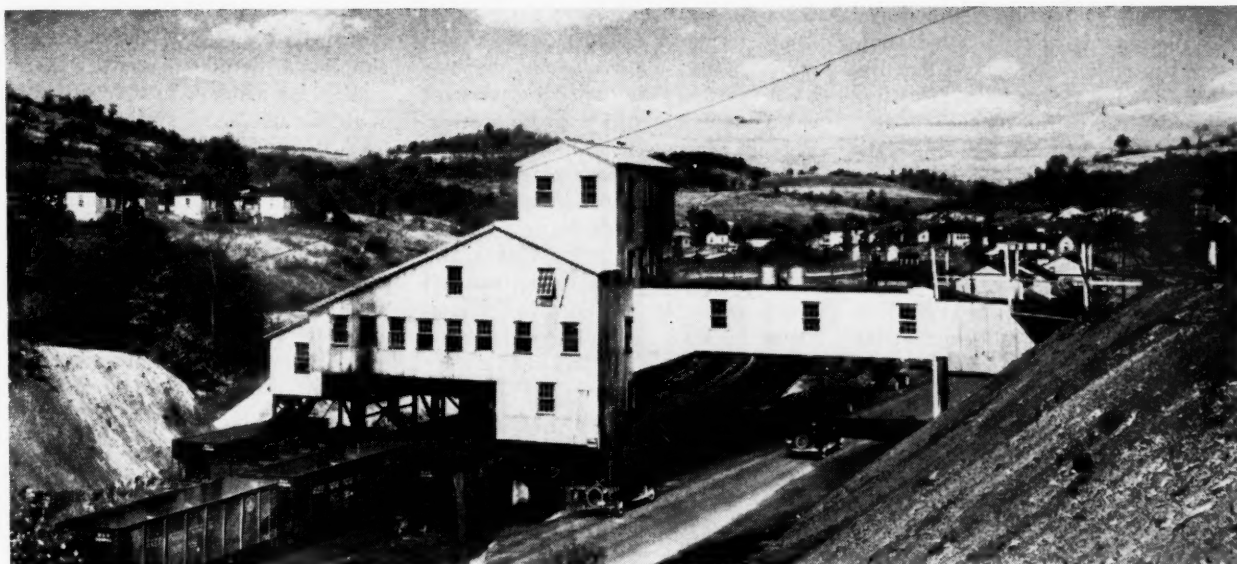
Records of machine condition and work done in the shop during weekly inspections are confined to one simple report for each machine and this report is made out by the mechanic who does the work. No special form is used but instead the report is written on a plain sheet of 8½x11-in. paper. It describes briefly the condition of the principal unit assemblies of the cutting machine, loader or locomotive and indicates if and when a repair was made. Also the report states the number of splices in the trailing cable. These reports are designed only for the benefit of the maintenance foreman and are filed at his desk in the supply room.

The new spic and span arrangement and general appearance in the new underground shop encourages the mechanics to keep the mobile mining equipment in like condition. If a machine comes in with accumulations of dirt or grease on any part, the unit is first cleaned thoroughly so that defects are more easily seen and the repairing facilitated.

General operating headquarters for the four divisions of the Consolidation Coal Co. are at Fairmont, W. Va. W. L. Doolittle is general manager of operations and M. H. Forester is assistant general manager.



Plan and elevation showing inside dimensions of new underground shop.



"Radio" communication insures a steadier flow of coal to this Frances Fuel Co. preparation plant.

LOCOMOTIVE "RADIOS"

Solve Communication Problem And Facilitate Haulage at the Frances Mine

EQUIPPING two haulage locomotives with "radio" sets and installing a third unit in the mine office at the drift mouth was the solution to the communication problem, particularly in the control of trip movement, at the Frances mine of the Frances Fuel Co., near Monongah in the Fairmont field of northern West Virginia. The equipment utilizes the trolley system for two-way voice communication between the locomotives, whether standing or running, and between the locomotives and the outside.

Frances mine was equipped with a telephone system "of sorts" when operations were taken over several years ago by the present company, headed by R. A. Poland, president and general superintendent; Freeman Echols is foreman. Present output (one tiple shift) is approximately 700 tons per day, prepared in a Heyl & Patter-

son steel tiple equipped with a shaker unit capable of producing, by proper gate adjustment, 13 different sizes without changing screens. With screen changes, 29 sizes may be shipped. Auxiliaries include picking tables, two crushers, loading booms and other modern adjuncts to preparation.

The mine is in the Pittsburgh seam overlaid by the characteristic draw-slate and rider coal. Although top coal is left as protection, falls occurring from time to time made telephone service uncertain, in addition to a substantial cost for moving, extending, repairing and maintaining the system. Consequently, Mr. Poland, about 1935, started a search for a communication system along the lines of that now employed, and in February, 1940, bought the three units now on hand through the Safety

Stemming Plug Sales Corporation, Pittsburgh, Pa.

All three units are Bogen 5W "Communo Phones," attached to the trolley system through resistances. Voice transmittal is accomplished through the medium of high-frequency waves. A diaphragm in each unit, with the necessary vacuum tubes, acts as both transmitter and receiver. Two of the units, for use on the locomotives, have steel cases and cost \$70 each at the time of purchase. Cost of the office unit, with walnut case, was \$66.39, making the total for the three \$206.39. Repairs for the period February, 1940-September, 1941, inclusive, totaled \$23.98, largely for tubes.

Maximum main-line haul at Frances mine is around 10,000 ft. One 8-ton Goodman locomotive normally works between the outside and a Joy section, in addition to handling coal brought

to a passway by two other locomotives. This passway is about one-half mile inside the pit mouth. One of the two locomotives is a 6-ton machine hauling strip coal from a bin on the outcrop. The second is another 8-ton machine with "radio" serving the other sections of the mine. On occasions, this machine may run to the outside also, but usually it exchanges loads for empties at the passway. The radios enable the motormen on the two 8-ton machines to arrange meetings at the passway and take care of the wants of the 6-ton unit when it is working, in addition to informing each other of

their whereabouts when using the same stretch of track.

Since the motormen on the two 8-ton locomotives are in constant voice communication with each other, whether running or still, they are able to handle all questions of trip movement and car distribution between themselves. The outside unit, in the office of the chief clerk, enables him to keep track of the locomotives and also is available for general communication between inside and outside.

The fact that the equipment always is available for service as long as power is on the trolley system is

counted as an important asset. Thus, there is no delay in calling out for supplies to be gotten ready or for attention for a miner in case of injury. With the telephone system previously used, it was found that falls and other troubles were quite likely to render it inoperative at times, thus making it necessary for a locomotive to come to the outside to bring news of an injury, delaying by that much preparations for handling the case. Since failure of the trolley system means a stoppage in work, it follows that a break or other interruption gets immediate attention, thus insuring prompt resumption of communication, whereas the tendency with the telephone system, it was found, was to delay action until a more convenient time, with the result that it might not be fixed for several days.

Helpful in Derailment

The "radio" sets, as shown in an accompanying illustration, are mounted on the locomotives just ahead of the operator's seat. One of the two has a built-in resistance. The ground is attached to the locomotive frame, with the hot connection to the lead-in wire on the trolley pole. In addition to facilitating trip movement and general communication in other respects the equipment has been found quite helpful in such special cases as a trip derailment on a curve. Trips usually comprise around 40 cars, and in one derailment the motorman called the second to his assistance, the second man, under directions from the first, pulling the cars back to facilitate re-railing operations. Flagging and whistle and light signals, which would have required at least one and perhaps more men around the curve, were unnecessary. Assembling empty trips on the outside often is facilitated by the "radio" equipment, since the man in the office, which overlooks the mine yard, can give directions to the motorman out of sight inside the pit mouth when such a procedure becomes necessary.

Another advantage of the "radio" equipment is the fact that it requires that wiring and bonding be kept in good condition, as breaks and grounds result in noise and poor service. Wire and bonds were gone over when the communication system was installed and put in the necessary first-class shape. Since that time, any short, ground or break immediately is reflected in noise or bad communication, and consequently receives immediate attention.



Showing office set on the chief clerk's desk.



One of the two Frances-mine locomotives with the "radio" set installed just in front of the motorman's seat.

FOREMEN'S

QUESTION FORUM

When to Drill, Charge and Fire Shotholes Should the Charge Limit Be Increased? *

DRILLING and charging drillholes before the coal is cut, asserted W. Garfield Thomas, Deputy Secretary of Mines, Pennsylvania Bituminous Division, might result at times in holes being drilled to a greater distance than that reached by the cut in the coal. Though such holes would be "in the solid," as they are already charged, they must be shot, even at the risk of a blow-out shot, for disposing of them in any other way would be still more hazardous.

Such prematurely placed charges might be exploded also by stray currents from the cutting machine, and some of the lead wires from the charges might come in contact with the cutter and the charges be exploded by electricity from the machine. Furthermore, the machine might cut directly into one of the charges and set it off by this physical contact. It may not have been expected that the machine runner would cut in the direction of the charge, but clay veins, horsebacks or other disturbances may make him vary from his intention.

Holes May Be Misdirected

He may also misjudge the direction of the shothole. Sometimes in top cutting under tender roof, the top may push down on the cut and stick the machine, and, when the latter is pulled from the face, the cut cannot be seen. Pressure that will produce such a result might set off one or more charges. For these reasons, charging prior to cutting should not be permitted.

Multiple Shooting—Discussing the danger of drilling and charging all the shots at one time after the coal has been cut, Mr. Thomas said: Where shotholes are drilled close together and one of the shots does more work than it was expected to do, the second shot may be relieved of part of its burden and a windy shot result, whereas if shots were charged and fired one at a time, the shotfirer or miner would see that the first shot had almost uncovered the second; he could then gage the charge for the second hole and thus avoid a windy shot.

No advantage accrues from drilling holes before places are bottom-cut by shortwall mining machines, declared T. F. Good, mine inspector, Jones & Laughlin Steel Corporation, Vesta & Shannopin division, but where coal is top-cut and sheared, bugdust accumulates in front of the working face and part of this must be removed before some of the holes can be drilled by the equipment on the

cutting machine. This delays the cycle of face preparation, so, at times, holes may be drilled before the place is top- or center-cut, so to avoid delaying the cutting machine while the bugdust is being removed from the front of the face preparatory to drilling.

Such a practice is unsafe, as it leads to misplacement of holes in relation to the machine kerf. Gripping holes and holes on the solid result and these in turn may cause blow-out shots with danger of ignition of coal dust or methane. Ill-placed holes may lead to overhanging or tight rib coal and to the dangers incident to brushing or barring down such undislodged material.

Referring to the drilling and charging of a series of holes over an undercut or under a top cut and the shooting of all the holes at one time, Mr. Good declared it to be a very common but certainly not the best practice. The mining law does not prohibit it, however. Like Mr. Thomas, he showed how the firing of a hole in the middle of the face where there were three might result in decreasing the anticipated resistance to the rib shots on the side toward the middle of the face. This feebly resisting coal being blown away, the shot will be relieved so that the coal against the rib will not be blown down and, when this coal which cannot safely be drilled again and shot down refuses to fall, it must be barred down with consequent danger.

A hole can easily be overcharged, because the irregularity of the bands and impurities prevent the establishment of a standard; hence the drilling and charging of every shothole should be left to the judgment of each individual shotfirer.

Restricts Permissibility

Charge Limit Set at 1½ Lb.—The bituminous laws of Pennsylvania require that permissible explosives be used in all gassy mines and do not stipulate a charge limit for any particular hole, but the Bureau of Mines asserts that the explosives it declares are permissible are so only (1) where the charge per hole does not exceed 1½ lb., (2) where that charge is properly confined with clay or other incombustible stemming, (3) where the shot is not fired in the presence of a dangerous percentage of methane, (4) where the shot is not dependent on some other shot, (5) where the drillhole is not bored in beyond the cutting, and (6) where it does not have a burden so heavy that the shot is likely to blow out. No shots are permissible if any one of these six provisions is not observed.

Many mining men believe that shooting would be safer if fewer holes were drilled

and larger charges, if necessary, were used. With drillholes spaced at greater distances, they argue, one shot would be less likely to fire or detonate a charge in an adjoining charged drillhole, and each shot would do its work and not blow out on the imperfectly confined side. The need for heavier charges arises from the increase in the length of cutter bars. Many believe that, where 4 lb. of explosive is needed to shoot down a cut of coal adequately, it would be better to do it with two holes each charged with 2 lb. of explosive than to charge and shoot three holes with the charge limit of 1½ lb.

Rare indeed is the practice of charging drillholes before cutting, said M. W. Thomas, State mine inspector; he had never seen it done, though it might be the practice in mines which are not gassy and where men accordingly shoot their own coal. However, drilling and charging of all holes at one time after cutting is quite usual.

Multiple Shooting

Similar statements were made by G. S. Struble, mine superintendent, Nemaquin, Pa. However, while denouncing the first method and saying he would not permit it at any mine under his supervision, he stated the pros and cons of the more general practice, as follows: When several shots are charged before any coal is shot, one or more charges may be overlooked. Mechanized mining requires better face preparation than hand loading, hence the need for drilling more holes if the legal charge is not to be exceeded. This multiplicity of holes makes it likely that the shotfirer will misjudge the placing of holes and their charging. Shotfirers do not know always what effect the firing of each charge will have on the cut. One shot may rob another. The other holes, already charged, are fired, causing blow-out, windy or misfired shots. Charges sometimes are separated, causing part of the shot to remain unshot or even unignited.

Why Was 1½ Lb. Set as Limit?—Years ago when cuts were 4 to 5 ft. deep, 1½ lb. of permissible powder was set as the charge limit; why Mr. Struble had never been able to learn. Today, kerfs are cut in the coal 9, 10 or even 11 ft. deep. Many hazards will be reduced by raising the charge limit. The number of drillholes will be reduced 40 to 50 percent. Less smoke and dust to contaminate the mine air will be created. Less coal will be shot back on the rails to be pulverized under the wheels of moving equipment. Before all charges have been fired, especially in pillar work, the coal or roof in the place may fall, covering the remaining charges, a hazardous condition for men cleaning or timbering the place. Charges may be left in the gob where they may be discharged later by a direct blow or from pressure.

Some shotfirers lay out all the explosives

* Symposium on "Hazards in connection with drilling and charging a number of holes with explosives before coal is undercut or before the first shot is fired," presented at the Coal Mining Institute of America, Pittsburgh, Pa., Dec. 12, 1941.

and detonators to be used in a single cut before they begin to charge the holes, and some explosive may be lost in the cuttings, where it may be loaded and sent to the surface. Most mines check their explosives, but no system is foolproof. In shooting a stump to obtain a fall, the man shooting the coal should not go back into the place after the supporting stump has been disturbed, but by charging all the holes and connecting them to separate leads they can be shot without entering the place. The same danger is not faced where places are either bottom- or top-cut.

With mobile loading in a top-cut place, 16 ft. wide and coal 7 to 8 ft. thick, four middle and four bottom holes frequently will be required. The holes in the middle of the face can be charged and shot separately without difficulty. Then the loading machine will have to be trammed to the face to load the loose coal so that the bottom holes can be charged. While each bottom hole is being charged and shot, the loading machine will be idle. After each bottom hole is fired, some of the coal must be loaded so that the next hole can be charged and shot. But with this procedure, the loading-machine operative and the transportation men are idle while the shotfirer is working and the shotfirer is idle while coal is being loaded. By charging all the holes at one time, no one except the shotfirer need be in the place until all shots have been fired. In this work, each

bottom charge is connected to a separate pair of insulated wires, extending 15 to 20 ft. from the face and covered with the cuttings. After all the middle charges have been fired, the shotfirer connects his cable to these bottom wires, one pair at a time, and fires the remaining shots; thus all men work their full shift without interfering with each other.

"I have been asked several times," declared Richard Maize, "to provide for an increase in the charge limit, and I have referred the matter to the U. S. Bureau of Mines." Perhaps a change is desirable in view of the fact that mechanization is displacing hand loading and as a heavier charge might reduce the hazard of a multiplicity of holes. It would seem permissible to drill the holes at any time but not to charge them until the coal has been cut.

Urgent appeals to change the charge limit are rarely addressed today to the West Virginia Department of Mines, declared Chief N. P. Rhinehart, though at one time operators were quite anxious for some such change. Multiple shooting has been permitted, but purely on an experimental basis. There are dangers, said W. P. Vance, general superintendent, Butler Consolidated Coal Co., both in multiple and in single-shot shooting. One must take one's choice. It is dangerous to cross the road, and one must decide whether to cross it and neglect one's business or to accept the risk and attain a desired end.

Advocate Continual Use of Water Spray To Quench Fires in Mine Dumps

MUCH experience in extinguishing dump fires became available to the No. 3 subcommittee of the Yorkshire Advisory Committee on Mining Research, which made its determinations known at a meeting of the Midland Institute of Mining Engineers, Doncaster, England, Jan. 15.

It found that water is very effective when so distributed by sprays, that it will seep into the burning pile without unduly disturbing the surface. Too much emphasis cannot be laid on the importance of spraying continuously, especially in the early stages, until the fire is controlled, as one day's cessation may undo the good work done by a week's regular treatment.

How to Spray Burning Dumps—Sprays should be chosen that are not likely to choke. Saw-nicked pipes and cone-type sprays give the best results. A pressure of about 40 lb. per square inch is necessary to produce a "rain" or mist of the required fineness. Water spraying not only cools the burning pile but accelerates the weathering of the rock and tends to wash fines and disintegrated material into the bottom of the heap, thus consolidating the mass and excluding air. As long as waste is being dumped, water should continue to be sprayed, although not necessarily unremittably, once the pile has cooled. Fresh dumpings, if not wetted when being deposited, should be sprayed well at the end of the day as soon as dumping has ceased. Much experience has shown that fires, when subdued for a time, frequently flare afresh and even burn with increased vigor when

water is directed on them in bulk through hose or is passed down through holes made in the waste pile.

Water Should Consolidate Dump—Apparently, says the report, water when used in such large quantities washes small material out of the spaces between the large stones, leaving openings through which air to support combustion can later enter readily. After over a year's experience with water spraying, it can be stated confidently that mine-dump fires can be brought under control. However, a reduction in the quantity of combustible in the material dumped not only prevents a nuisance but has proved to be remunerative.

Of 76 waste heaps at the Yorkshire collieries, 52 were on fire when the investigation started. Fourteen of the dumps were in the form of a cone and all these but two were burning. Ten out of 18 that were placed by aerial ropeways were on fire and 30 out of 44 that were dumped from cars to form a flat surface had become ignited. Though some of the fires were from spontaneous heating of the coal buried in the waste material, some had been started by hot ashes, others by fires which men had lighted either to warm themselves or to burn rubbish.

Many Means of Extinguishment Tried—Some companies are trying with some effect to prevent fires by separating and crushing interstratified coal as picked off the screens, rewashing the coal thereafter so as to remove as much as possible of the combustible. On the piles, some have tried pumping water; others have discharged sludge from

the water softeners and effluent liquor from coke ovens. Others have tried grouting with clay and limestone sludges or passing the material from the mine workings over a slow-moving belt and picking out combustible matter. As a result of the liberal use of water as a fine spray, glare from burning spoil heaps was entirely eliminated within two or three months of the war's outbreak.

At the Airdale Collieries, the spoil heaps were grouted with a mixture of water and shale dust, making the whole mass solid and thus shutting off the air. In one dump, 200 holes were treated, some in the hottest areas being only 2 ft. apart. About 643 tons of dust was injected.

Manpower Needs Conserving And Safety Is Efficiency

When the ultimate in production is desired, men and machines must give utmost service, and failure of either reduces output, for accidents incapacitate both. It is still true, as old John Heywood said in the 16th century, "haste maketh waste." Even on this low unmoral plane, safety still is a most important consideration. As President Roosevelt well said in his call urging the National Safety Council to mobilize its nation-wide resources for safety: "The troubled times in which we live must not make us callous or indifferent to human suffering. These unusual times require unusual safety efforts." With steady work and a large tonnage, safety and efficiency costs can be underwritten painlessly.

Shall We Seek Dust Reduction Or Dust Control, or Both?

Allaying dust "has the floor," and it seems to make the public forget that the reduction of dust is one of the biggest of our mining needs. Better cutting devices, in some cases even pickhammers, give promise of greater safety, for, with the more friable coal, less powerful cutting and breaking agents can be used. A conveyor, driven by the coal cutter, can be placed behind a cutting machine to lift the kirvings which it makes as soon as they are made, thus preventing the air current from raising the dust into suspension and the picks on the cutter chain from carrying the kirvings back into the cut for comminution on the floor into the finest of dust.

Recirculation of such dust by the cutting chain may perhaps be avoided if the dust is loaded promptly by a conveyor onto the face belt and carried away, and less dust will be raised than when the kirvings are first shoveled to safety and then thrown a second time on the face belt. The cuttings will be less broken by travel, the dust will not lie so long where it can be raised by air currents and it will be loaded out before the face is shot, though good practice would provide for that even where no such kirving carrier is provided. Only experiment in still air will show how much degradation will be avoided, and greater safety and increased visibility will not be the only saving. There will be an increase in salable coal and better surface conditions, for dust on the surface is a sociological and political problem already clamoring for solution.

QUESTIONS

ASKED BY STATE BOARDS

Questions and Answers Examination for Anthracite Foremen and Assistants*

Methane Extinguishes Lamp

Q.—A blower giving off 4,000 cu.ft. of methane per minute enters a split of air of 16,000 cu.ft. per minute; what will be the result if the mixture meets an open light?

A.—The methane from the blower added to the split of air would aggregate 4,000 + 16,000 cu.ft. per minute, or 20,000 cu.ft. The percentage of methane in the mixture thus formed would be $\frac{4,000}{20,000} \times 100 = 20$ percent.

With such a large quantity of methane, that gas would be incombustible, the upper limit of combustibility of methane in air being 13.4 percent for upward propagation and 14.6 for downward propagation. I. C. 6983 U. S. Bureau of Mines, January, 1938, gives 15 percent as the upper limit. However, it must be recognized that the mixing might be so incomplete that local combustion might be possible, even probable.

Q.—For what are the following instruments employed: anemometer, barometer, thermometer and water gage?

A.—An anemometer measures the velocity of the air current; a barometer, the pressure of the atmosphere; a thermometer, the temperature of the air and a water gage the difference of pressure between two adjacent parts of the ventilating circuit.

Barrier and Chain Pillars

Q.—What is a barrier pillar? What is a chain pillar? What are their purposes?

A.—Correctly speaking, a barrier pillar is a continuous pillar left between the workings of adjacent mines or adjacent properties, or between two areas in the same mine, but the expression also is used, somewhat loosely, for the big pillars left on the flank of a gangway for its protection. In this latter case, wing or side pillar would be a better name. The purpose of the first three types of pillar is to keep water, methane and air in the adjacent mine or part of a mine from interfering with the operation of the other mine or other part of a mine and to prevent a squeeze or pressure in one mine or one area from being communicated to the other.

However, barrier pillars are now visualized as a means of preventing the threatened drowning of all the mines in a field. When there are no such pillars, each mine in turn has to carry the insuperable burden of caring for all the water that comes to it from all higher working levels. Thus if the water has to be pumped, the cost of pumping may wreck the finances of one mine after another

until all have had to retire from business.

A chain pillar in the anthracite region is sometimes used to define a pillar separating the workings of one lift from those of another, but it is commonly defined as "a pillar left to protect the gangway and air-course and lying between those two passages." With the gangway, airway and chutes or crosscuts, it resembles a chain, hence the name.

What Foreman Must Examine

Q.—To comply with the mining law, what examinations must the mine foreman and assistant mine foreman make every working day and week?

A.—Every morning—All working places and traveling roads and all other places that

might endanger the safety of workmen must be examined. (This requirement is for mines generating explosive gas and must be made before workmen enter the mine, and such examination shall be made with a safety lamp within three hours at most before time for commencing work.)—Art. 12, Rule 4.

Every working day—Every working place while the men of such place are or should be at work. If the mine is idle 48 hours or more, the places mentioned shall be examined before operations are resumed.—Art. 12, Rule 12.

At least once every day—All slopes, shafts, main roads, traveling ways, signal apparatus, pulleys and timbering. (This applies to the "mine foreman or some other competent person or persons to be designated by him".)—Sec. 12, Rule 13.

At least once a week—All accessible parts of an abandoned portion of a mine in which explosive gases have been found.—Sec. 12, Rule 4.

These rules, except Rule 13, apply to the mine foreman or his assistant or assistants.

Queries Asked First and Second Class Foremen At Examination Held in State of Ohio*

Cap Pieces

Q.—Why are cap pieces placed on mine posts?

A.—Cap pieces are placed on mine posts to cushion the load. The posts are not intended to support all the overburden up to the top of the ground, but only the slate that tends to draw away from the roof. To use a simile from house construction, the attempt is not to support the ceiling but the plaster beneath it, though in house-building care is taken, or should be taken, to attach the weak plaster to the ceiling so that it will not fall even without support from below. But in the mine the drawslate is not keyed to the main roof and nearly always has to have added support.

If the post keeps the roof more or less rigidly in place, the post has to take the full load, but if the post gives way just a little, the roof has to bend, and, in bending, brings into operation stresses that take up the major part of the load, while the prop merely holds the loose drawrock, if there is any, up against the main roof.

The cap cushions the post, because the pressure of the roof is at right angles to the fibers of the cap piece, the direction in which wood most readily can be compressed. Furthermore, with a wedged cap piece, the prop can be more accurately adjusted to the right position, so that the top of the post is im-

mediately over the bottom; the cushioning characteristic of the wood when placed so that the stress is across the grain makes that possible. Also, the post is less likely to split than if erected without a cap piece, because the latter distributes the load. The cap piece also helps to divide up the load as between adjacent props, for it enables an overstressed prop to give way a little, putting some of the burden on its neighbors. Moreover, it serves in a minor way as a crossbar to widen the support given to the roof. Where the drawslate is quite rotten, it may spread the pressure on the slate so that it will not be broken around the edges of the support.

Dust Explosions

Q.—What observations in regard to coal dust would you as a mine foreman make that might suggest means of lessening the dangers arising from its presence in bituminous coal mines?

A.—All bituminous coal dust that will pass through a sieve having 20 meshes to the inch in either direction is dangerous in that state, but all coal along a roadway is a potential hazard, for it is likely to be broken down by the passage of persons, animals or cars. Dust on the floor, ribs, roof or timbers is not an immediate source of danger, but should it be disturbed and become suspended in a cloud (1) by a gust of wind, (2) by a crowded air current, (3) by falling from a higher point to a lower, (4) by a blow-out

* Continued from January, 1942, *Coal Age*, p. 63.

* Continued from March, 1942, *Coal Age*, p. 65.

shot, (5) by an electric arc, or (6) by an explosion of gas or of other dust, it will be an immediate hazard. The first four may occur at any time, and the last is extremely likely in a gassy mine.

Suspended coal dust explodes with great ease and violence, and only a little of it is needed to enable an explosion to spread or "propagate." An equal quantity of fine black blasting powder in suspension would be but little more dangerous. An explosion can be obtained if enough dust to form a cone that will cover the surface of a 50c. piece (I.C. 7138) is suspended in a cloud in each cubic foot of air and if then a light is introduced to set it off. Dust may be raised by the wind from traveling trips, by runaway cars, by the closing and opening of doors, by collisions between cars or by falls of rock or coal, but the most prolific source is machinery employed to cut, drill, load and transport coal. Fine dust from these operations is carried by the air to the return, and therefore that airway, even if not also a haulageway, must be kept at all times carefully rock-dusted.

Dust may be raised from the floor at points where the air travels rapidly, such as where cars are standing, traveling or passing, thus lessening the cross-section of the airway and increasing, perhaps doubling or even tripling, the speed of the air. All forms of bituminous coal dust from low-volatile coal to high-volatile are highly explosive.

Q.—(a) What causes a coal-dust explosion?
(b) What method would you adopt to prevent such a disaster?

A.—(a) Coal-dust explosions are caused by the almost instantaneous combustion of fine bituminous, subbituminous or lignite coal and, for their extension, or, as it usually is expressed, "propagation," only air with sufficient oxygen for combustion and with enough extremely fine coal dust sailing around in it is required. Moreover, even in the absence of gas, electric arcs will disturb and explode coal dust.

(b) Many methods may be adopted to prevent a dust explosion, and it is best to provide as many as possible of these means of prevention. These means are: (1) use plenty of finely ground rock dust (preferably limestone dust) on floors, roof, timbers and ribs, especially the ribs in both intake and return and in rooms and headings up to within 20 ft. of the working face; (2) use water on both sides of the cutter bar; (3) water the fine coal before it is loaded (preferably putting a wetting agent in the water to make the water wet the dust more readily); (4) water the coal as it is loaded and if it is reloaded water it again, wetting down the coal in the car; (5) in hot, dry weather wet down the bottoms of the empty cars as they return to the mine; (6) occasionally load out coal and inert dust in the roadways; (7) keep the percentage of methane at all points below 2 per cent, and in the return below 1 per cent because methane makes coal dust more explosive and because methane may itself explode, if in sufficient quantity per cubic foot of air, and then will dislodge and explode coal dust.

In Ohio, with every 1 per cent of methane, 7 or 8 per cent more rock dust will be needed to render the coal dust harmless. Thus, if 63 per cent of rock dust is necessary when no methane is present, 71 per cent will

be needed if 1 per cent of methane is present. The figure 63 per cent is about the average percentage needed in Ohio when the air is free of methane.

However, 55 per cent, not 63 per cent, is the minimum specified in the Recommended American Practice approved by the Engineering Standards Committee where methane is absent. The figures given are those more recently (1938) suggested by H. P. Greenwald, supervising engineer, Experimental Coal Mine Section, U. S. Bureau of Mines, for coal having 43 per cent of volatile matter, on a moisture-and-ash-free basis—Technical Publication 975, American Institute of Mining and Metallurgical Engineers—and 43 per cent volatile matter is about the average figure for Ohio coals.

Examination for Coal-Mine Officials State of Colorado*

Cross-Section of Airway

Q.—A haulageway is 10 ft. wide with plumb or vertical, side walls 5 ft. high. The upper part above the walls forms a half circle of 10 ft. diameter. What is the cross-sectional area of this haulageway?

Formula—Area of circle = $d^2 \times 0.7854$.

A.—Area below the half circle = $10 \times 5 = 50$ sq.ft.; half circle = $\frac{1}{2}(10^2 \times 0.7854) = \frac{1}{2}(100 \times 0.7854) = \frac{1}{2} \times 78.54 = 39.27$ sq. ft. Total area = $50 + 39.27 = 89.27$ sq.ft.

Q.—An airway is $7\frac{1}{2}$ ft. high and 10 ft. wide. A tool box $3\frac{1}{2}$ ft. high and 3 ft. wide is standing in this airway. What cross-sectional area is available for the passage of the current in the airway at the point where the box is standing?

A.—The airway cross-section where not reduced by the box is $7.5 \times 10 = 75$ sq.ft. The area occupied by the box is $3\frac{1}{2} \times 3 = 10\frac{1}{2}$ sq.ft. Therefore, the area in which the current can travel is $75 - 10.5 = 64.5$ sq.ft.

Q.—(a) Name the dangerous gases found in coal mines.

(b) Name the different damps found in coal mines.

(c) Which of these damps are explosive? Which among them are poisonous?

(d) Which are asphyxiating or suffocating?

(e) How do you detect each one of these damps?

A.—(a) Methane, carbon dioxide, carbon monoxide, hydrogen sulphide, hydrogen, ethane and nitrogen are dangerous gases. Nitrogen will suffocate if there is too much of it and, as oxygen combines with methane, carbon monoxide, hydrogen and ethane, there are times when there may be even too much oxygen for safety.

(b) Firedamp, blackdamp (or choke-damp), whitedamp, afterdamp, stinkdamp are names given to vitiated mine atmospheres.

(c) Firedamp, whitedamp and afterdamp are or may be explosive; the last two usually will make only mild explosions. Whitedamp and afterdamp are poisonous. Stink-

Other methods of preventing a coal-dust explosion are: (8) moisten the air entering the mine to prevent the dust from drying; (9) put calcium chloride or some wetting agent on the floor to keep the floor dust moist and therefore less likely to rise; (10) wash the ribs with a spray and let them dry before applying rock dust; (11) shoot coal without excessive violence, keeping the charges of explosive always within the government charge limit; (12) use short-flame explosives that will not ignite dust when properly used; (13) stem all shots carefully, and (14) test the interior of shotholes with the scraper to ascertain if there are any crevices leading into the shothole. If they are found, drill another hole in unbroken coal.

damp, if it contained sufficient hydrogen sulphide would be poisonous. In the coal mine no such a concentration probably occurs unless from a mine fire or explosion.

(d) Blackdamp, or chokedamp, afterdamp and firedamp are asphyxiating or suffocating.

(e) Blackdamp or chokedamp can be detected by its property of extinguishing a flame; firedamp by its lengthening of a flame, followed, if there is enough methane in it, by an explosion; afterdamp and whitedamp by the death of a canary or other small animal, or by chemical means.

Q.—What is the difference between the "split system" of ventilating a coal mine and the "continuous-current system" of ventilation?

A.—In the continuous-current system there is but one current of air throughout the mine. Strictly speaking, with this system, this current goes undivided to every section of the working, all the air going to one working area after another until all have been visited. With the split system of ventilation there is a main current from which at various points a part of the current is removed to ventilate a certain working area commonly denominated a "split," which air then returns to the main current at a point further along that current from the point where it left it. Thus every part of the mine is ventilated—but not with the entire current but only with a portion of that air, which is designated as a "split."

Weights and Measures

Q.—Answer the following in the order they are given:

(a) What is the weight of a cubic foot of water?

(b) How many gallons are there in a cubic foot of water?

(c) About how many cubic feet of solid coal make one ton?

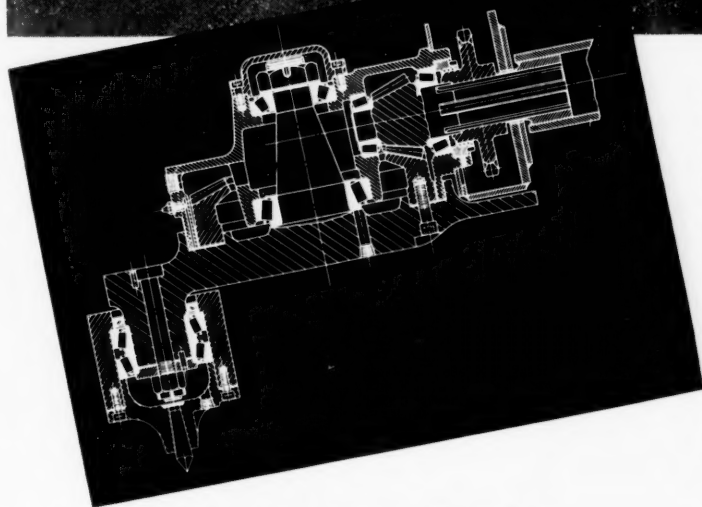
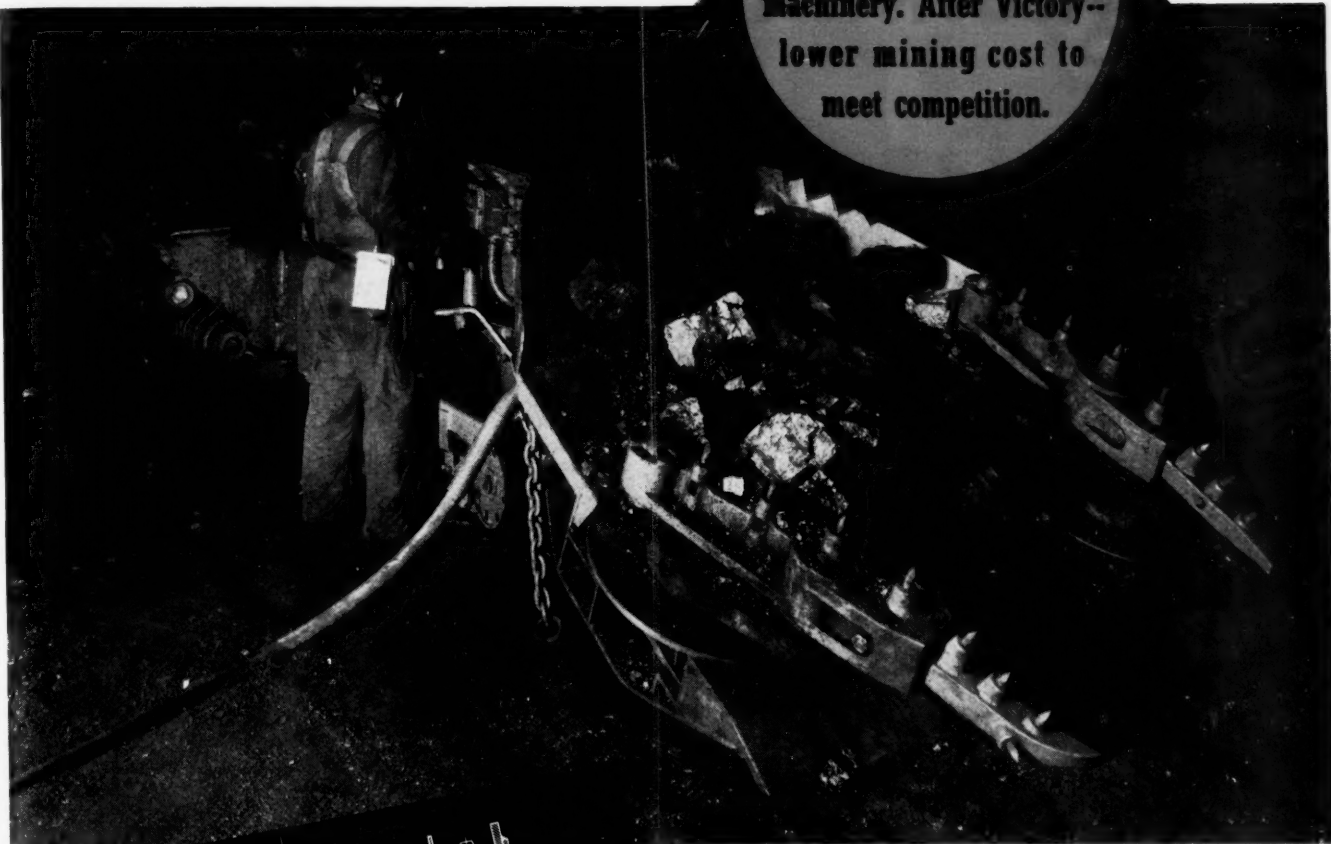
(d) About how many cubic feet of loose coal make one ton?

A.—(a) 62.427 lb., say 62.5 lb. (b) 7.4805, say $7\frac{1}{2}$ gal. (c) about 24 to $25\frac{1}{2}$ cu.ft. for bituminous coal. (d) about 40 cu.ft. for bituminous coal.

* Continued from March, 1942 *Coal Age*, p. 64.

Joy 11-BU Loader equipped with 56 Timken Bearings. The Joy Shuttle Car shown in the background is also equipped with Timken Bearings.

**More coal for
Victory--with Timken
Bearing Equipped mining
machinery. After Victory--
lower mining cost to
meet competition.**



Sectional drawing of the gathering head of the Joy 11-BU Loader showing application of Timken Bearings.

TIMKEN
TRADE MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; and Timken Rock Bits.

Speed, endurance, dependability and economy are four outstanding advantages Timken Tapered Roller Bearings give to mining equipment of all kinds. Joy Loaders have them—have had them for years.

The loader shown in the photograph is the Joy 11-BU. It is equipped with 56 Timken Bearings, including 2 in the Reliance electric motor with which it is powered. Thus it is thoroughly protected against those deadly enemies of all machines—friction; wear; radial, thrust and combined loads; and misalignment of moving parts.

The Joy Manufacturing Company has shipped 33 of these loaders to one operator in the Illinois Field, with 13 more on order. This operator is assured of fast, low-cost loading now and for years to come.

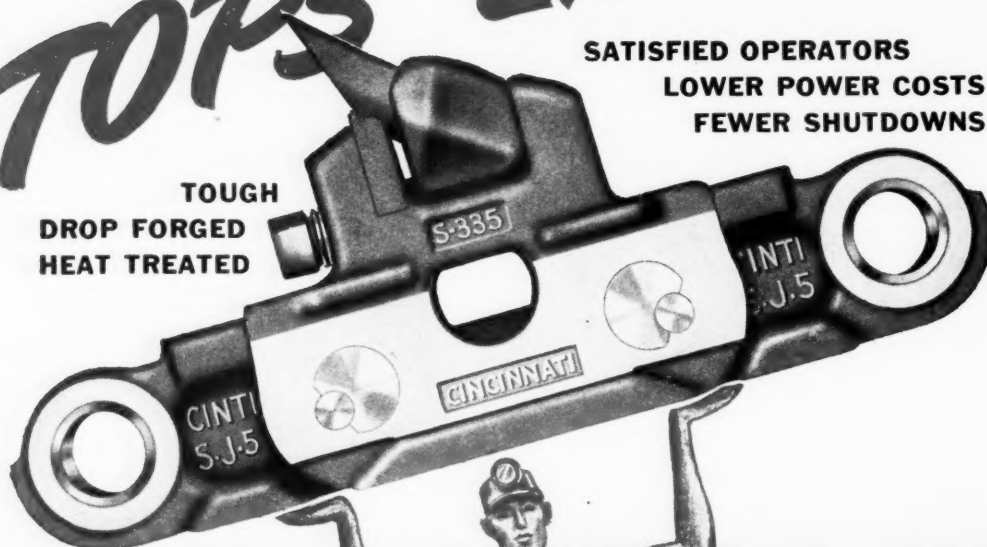
**THE TIMKEN ROLLER BEARING
COMPANY, CANTON, OHIO**

"CINCINNATI"

TOPS 'EM ALL

**SATISFIED OPERATORS
LOWER POWER COSTS
FEWER SHUTDOWNS**

**TOUGH
DROP FORGED
HEAT TREATED**



DUPLEX CHAINS AND BITS

Mine Owners, Superintendents and Operators of coal cutting equipment agree that for dependable low cost performance "Cincinnati" Tops 'Em All. No cutting job is too difficult. . . . delays are few and far between repairs when finally necessary are easily and inexpensively made. Lower power costs per ton are attributed to the unusual rigidity of the chain which prevents binding in the guides and cutterhead. Let us assist you in working out your coal cutting problem write today for further information.

* Cincinnati Cutter Chains, Bits and Bars are being used in thousands of mechanized mines because they not only keep coal moving with practically no delays but lower production costs as well.



THE CINCINNATI MINE MACHINERY CO.

2983 SPRING GROVE AVENUE • CINCINNATI, OHIO

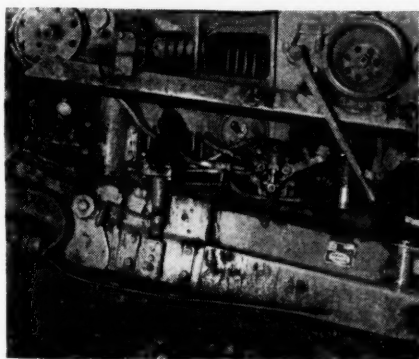
WHAT'S NEW IN OPERATING IDEAS

Controller Guards Redesigned To Prevent Bending

"At quitting time, a Joy operator reports to the boss—who is supposed to see that everything is in 100-percent condition for the following work day—that several days ago the coal guard over his control levers was bent down and chunks barely missed catching his hands and feet, and that it must be fixed or he will see the safety engineer," states Ernest Prudent, chief electrician, Zeigler No. 1 mine, Bell & Zoller Coal & Mining Co., Zeigler, Ill., in prefacing an account of how the difficulty was remedied.

"An accompanying illustration shows the guard bent down by large chunks, which is a common occurrence and seems to happen just when everything else also happens, involving the payment of overtime at 1½ times regular pay. Many times, these jobs were let go until there was more time.

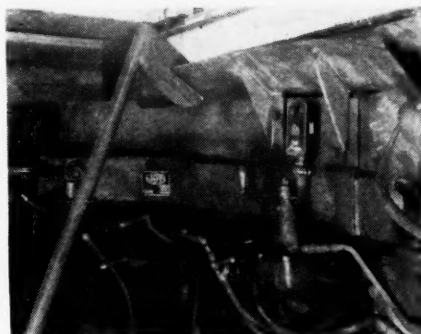
"The original procedure was to take off the guards, bring them to the shop, straighten them, take them back and put them on the machine again, which required considerable time. In a few shifts, the boss would hear the same story again—with his night shift still with all the jobs they could finish without overtime (the contract still calling for 1½ times pay over seven hours), as well as the safety engineer to think about.



Showing bent guard with the original mounting brackets.

You don't know our safety engineer. He believes that an accident caused by a bent guard is just a crime. And the boss also had other things to worry about, such as burned-up armatures, generator sets, clutches, drills, cutting machines and one or two other smaller things.

"The answer is shown in the second of the accompanying illustrations. No guards have been bent since. Here is shown the straightener (which is used on many other jobs) with the portable welding truck. In a few nights all ten machines were fixed. Some may say: 'Why not have a spare set of guards and just change them?' It is not that simple. When the machines were built



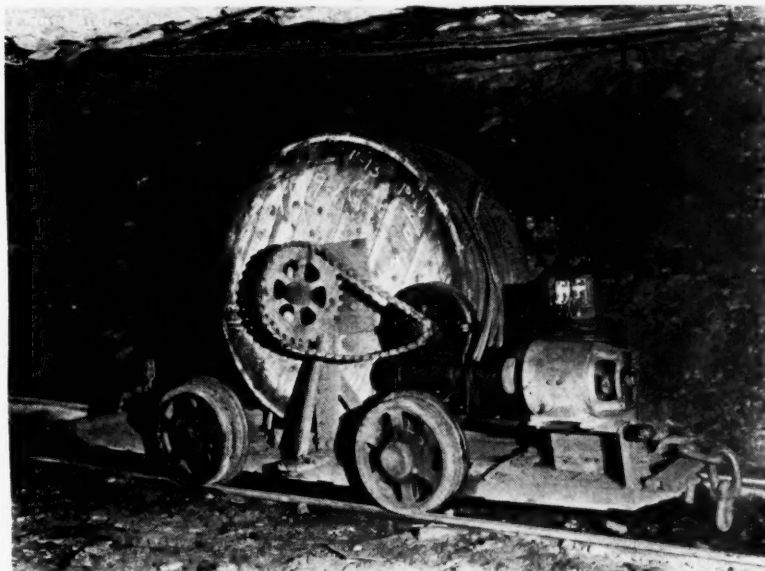
New mounting brackets and tool for straightening guard.

the drilling was different and the guards are not interchangeable.

"Now that we have gotten out of this difficulty so easily we agree with our safety engineer that it was a crime to run with bent guards. With the portable welding and cutting outfit, these guards were fixed as shown with 2½ hours of labor, including traveling time. Scrap plates and a few welding rods were used."

Power-Driven Reel Aids In Wire Recovery

In abandoned and worked-out territories economical and speedy recovery of material is essential—always with the safety idea in mind. To accomplish this, Dino Gori, electrician, Mine No. 4, Superior Coal Co., Gillespie, Ill., has constructed from scrap material "a very efficient reel for the recovery of machine and trolley wire," reports Howard L. Ely, the company's mining engineer.



How the recovery reel looks in service.

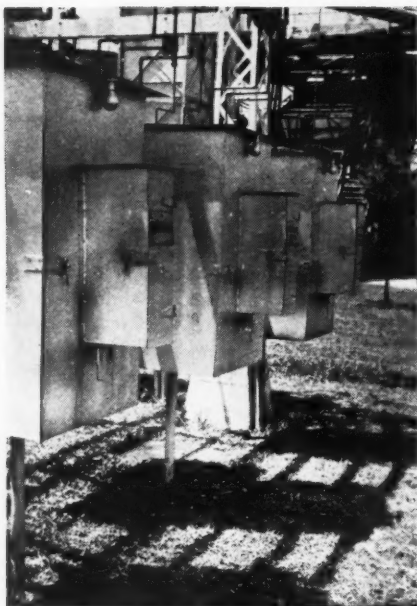
"Mr. Gori utilized a motor and reduction gear from an old loading conveyor and mounted it on a truck. A 30-tooth sprocket was fastened on the spool axle to permit it to be driven through the reduction gear as shown in the accompanying illustration.

"The recovery of the wire is quite simple. The free end of the wire is secured to the spool. When the switch is thrown to start the motor the spool rotates, winding up the wire and at the same time pulling the truck forward at exactly the same speed as the wire is being recovered. By reversing the motor, this wire can easily be laid out along a new entry preparatory to rehanging."

Entrance Placed Underground To Choke Back Lightning

At a Southern mine, where lightning often disturbs the power supply and equipment damage has been frequent, the chief electrician has adopted underground conduit entrances for 2,300-volt lines from transformer stations and pole terminals to loads in surface plants. Several years of experience since overhead entrances were displaced indicates that the new arrangement has reduced lightning damage to plant equipment.

The illustration shows wiring conduits entering the ground from three boxes housing FK35 overload oil circuit breakers at a transformer substation adjacent to a washing plant. In each conduit are three single-conductor rubber-covered and braided cables, and the three circuits feed several 2,300-volt motors which constitute the principal load of the plant. The chief electrician expresses



Connected to the bottom of each switch box is the conduit, which goes underground to the washer.

the opinion that these underground runs in metal conduit choke off to some extent the transmission of lightning surges. Safety and appearance also are improved by new entrances.

Crawler Sprockets and Drums Built Up by Arc Welding

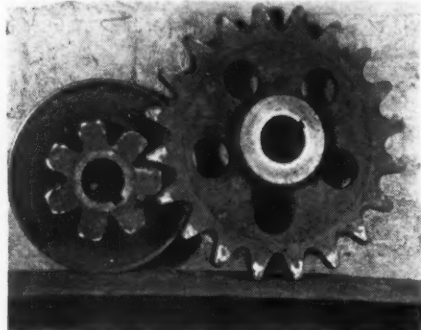
How crawler sprockets and brake drums on 11BU loading machines, which become badly worn after about 18 months of service, are built up and reclaimed is shown in the accompanying illustration submitted by Ernest Prudent, chief electrician, Zeigler No. 1 mine, Bell & Zoller Coal & Mining Co., Zeigler, Ill. Building up is done by arc welding, using "Stainweld A" rod. Some of the sprockets, Mr. Prudent reports, have been in service two years since welding.

The cost of the job for both a sprocket and drum is:

Labor	\$20.00
$\frac{3}{8}$ -in. Stainweld A, acetylene, oxygen	4.25
Overhead (10 per cent)	2.42
Total cost.....	\$26.67

To replace with new parts the cost would be:

New brake drum (No. 10143)	\$34.25
New drive sprocket (No. 10144)	30.00
Total cost.....	\$64.25

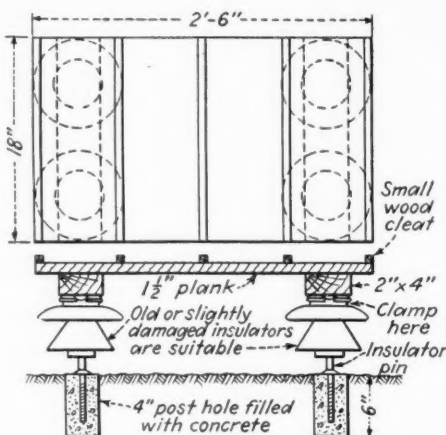


Drum and drive sprocket after build-up by welding.

Insulated Stool Gives Assurance of Safety

Ground resistance at platforms for electrical switching cannot be tested often enough to be certain that the platforms are solidly grounded, and visual inspection will not guarantee their safety unless they are permanently installed as in the illustration, says the Bureau of Safety as quoted in A.S.S.E.—Engineering Safety.

For many years, portable insulated platforms and rubber mats have been used to protect the operatives switching indoor high-voltage starting compensators, high-voltage disconnect switches and other high-voltage circuit-breaking devices. The industry, however, has not generally adopted permanently insulated stools for use at outdoor switches, perhaps because of the expense involved in constructing and maintaining them, although it has recognized the fact that insulated stools are vital at inside switch locations even though dry favorable conditions usually prevail. For the same reasons, permanently installed insulated platforms also are definitely essential to safe operation of outdoor switches.



Insulated stool for protection of operative.

Permanent insulated platforms may be constructed at minimum expense by using material usually on hand in electrical storerooms. Many companies have stocks of old, obsolete insulators, insulator pins and old crossarms. This material can be safely used in the construction of insulated stools with a cash outlay for new material limited to a few small items of hardware and varnish.

Insulated platforms may be installed permanently at switch locations by boring four 4-in. post holes 8 in. deep, filling them with concrete and inserting old pin or clamp-type insulator pins. If desirable, the concrete may be extended several inches above the ground. Insulators are turned on these pins and the platform is installed. The platform is held solidly to the insulators by $\frac{1}{4}$ -in. iron-bar clamps curved to fit the insulator top, flattened and drilled at the ends and clamped to the insulator by means of tiebolts.

Eyebolts are used to hold the platform to the clamps around the insulators and are bolted on the top side of the platform, which is constructed of 1 1/2-in. or heavier plank with crossarms used as cross members. Small wood cleats protect workmen from slipping while operating switches.

Dimensions of the platform depend largely

25 Percent More

An immediate 25-percent increase in output of war materials has been called for by Donald M. Nelson, chairman of the War Production Board. This can be expected to result in an immediate demand for more fuel for manufacturing and auxiliary activities, throwing an added burden on the mines and necessitating even greater attention to efficiency and prevention of interruptions. Sometimes, little things can cause big losses of tonnage, so it behooves operating, electrical, mechanical and safety men to be on the spot with a saving idea when the time comes. Perhaps you already have one. If so, here is the place to pass it on. Send it in, along with a sketch or photo if it will help to make it clearer. For each acceptable idea, Coal Age will pay \$5 or more on publication.

on the type of switch handle for which it is to be used, but it should be large enough to provide the operatives with freedom and safety. Soaking in linseed oil and two coats of Valspar varnish (waterproof) complete the job, except for any adjustment necessary in the switch handle as to the length of throw.

Kinks to Promote Welding By Men on the Job

Welding kinks offered in a recent issue of the Lincoln Stabilizer include a ground-cable hook (Fig. 1) submitted by Herbert H. Jordan, Chase, Kan. The wires in the cable are spread out and slipped over the hook (made of $\frac{1}{2}$ -in. round iron), and are fastened with a wire wrapped to pull them down into the groove ground in the hook. The handle is a piece of $\frac{3}{4}$ -in. pipe about 6 in. long, which is slipped over the joint and welded to the hook.

A holder for setting up small things to be welded, from M. Samuely, Surrey, England, is shown in Fig. 2. Two steel balls about $\frac{1}{2}$ in. in diameter are welded to the ends of an electrode or round length of iron or steel. Four strips are cut and clamped together, after which they are drilled with approxi-

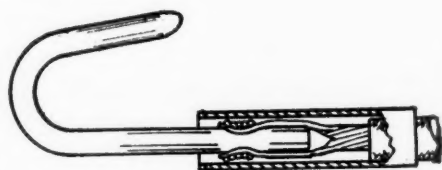


Fig. 1—Details of ground-cable hook.

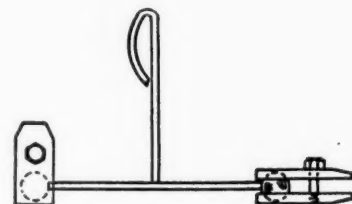


Fig. 2—Holder for small welding jobs.

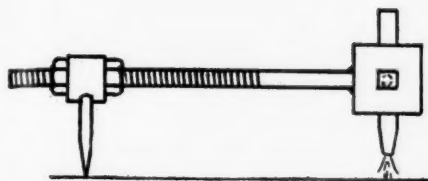


Fig. 3—Adjustable compass for circle cutting.

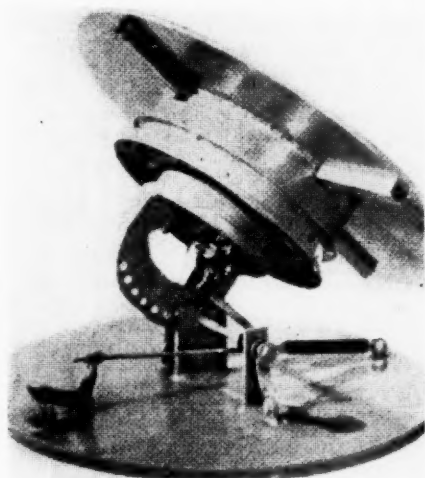
mately $\frac{1}{4}$ -in. holes. The tool then is assembled as shown in Fig. 2.

An adjustable compass for circle cutting, submitted by B. McConnell, Sydney, Australia, is shown in Fig. 3. The $\frac{1}{4}$ -in. round compass arm is screwed in or out to the desired length. A block on the other end with a hole in it accommodates the torch, which is held in place by a thumbscrew. When the compass arm has been adjusted, two nuts on the pivot hold it in position.

Revolving-Tilting Positioner Table Facilitates Welding Operations

Built at a cost of \$32.13, the revolving-tilting welding positioner table shown in the accompanying illustration was described in a recent issue of the *Hobart Arc Welding News* by John S. Green, Johnson & Jennings Co., Cleveland, Ohio. The answer to the question of how to obtain a satisfactory and cheap mechanism for the revolving member was found in the use of a front axle and wheel from a discarded truck, bought for \$1.50. New material consisted of a steel baseplate 1 in. thick and 34 in. in diameter; a steel table top $\frac{1}{2}$ in. thick and 36 in. in diameter; one coil spring ($\frac{1}{4}$ -in. wire 10 in. long); and one steel yoke plate, $\frac{3}{4}$ x12x16 in. The rest of the material was taken from the scrap bins.

The positioner, Mr. Green states, can be rotated easily with loads up to 1,000 lb. A pin, controlled by a foot pedal and registering with holes in the yoke, provides the required table-setting angle. A pressure plate controlled by springs and levers to the foot pedal gives the operator full control over the revolving motion of the table, which was drilled for suitable clamps for holding the work in position. Material cost was \$17.73; labor (90c. per hour), \$14.40.



Completed revolving-tilting welding positioner table.



DRAGGED across the mine floor, through muck and water—out to the room neck, back to the heading—reeled and unreeled countless times. No wonder moisture, abrasion and rough usage cause rapid wear of locomotive cables!

That's why you want the toughest, most resistant cables available. Study the construction of these Roebling Locomotive Reel Cables. Service in hundreds of mines proves that they have the staying qualities which keep breakdowns and replacements at a minimum.

RUBBER SHEATH

A rope laid conductor makes it extra flexible for easy reeling. The toughest kind of moisture resistant rubber sheath combines extra protection against impact and abrasion—with light weight. Sizes 1 to 4.

LOOM SHEATH

Where abrasion is not so severe, this cable offers adequate insulation and flexibility for many applications without the expense of an all-rubber sheath. It is covered with a heavy circular loom cotton sheath, treated with moisture repellent compound. Sizes 1 to 8.



RUBBER SHEATH



LOOM SHEATH

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY

Branches in Principal Cities

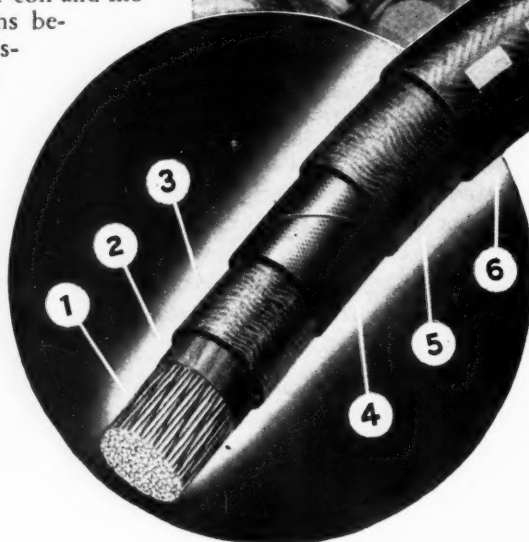
NO JUICE-NO COAL

PREVENT CABLE FAILURES in Cutters, Loaders and Locomotives with ROCKBESTOS A.V.C.

Every time an internal cable failure sends one of your cutters, loaders or locomotives back to the shops *production is thrown for a loss*—the maintenance crew gets a black eye—and the mine loses money!

Like the trickle that burst the dam, it's a tonnage-reducing leak that adds up to a lot of coal. One that should *and can* be plugged if you follow the lead of the equipment manufacturers and rewire with Rockbestos A.V.C. Mining Cable—the mining cable that stands up under oil, grease, and the heat of resistors, confined compartments and overloads without rotting, blooming or baking out.

Keep *your* equipment running at top tonnage schedules by using Rockbestos A.V.C. Mining Cable for coil and motor leads, and connections between controllers and resistors. Just ask any of the jobbers below for the *original* Rockbestos A.V.C.



ROCKBESTOS A.V.C. MINING CABLE
the original heatproof, fireproof, grease-proof and moistureproof mining cable.

- ① The flexible tinned copper conductor is perfectly and permanently centered in helically applied insulation.
- ② Paper separator prevents insulation from sticking to the conductor, makes stripping easy.
- ③ Heatproof felted asbestos protects against conductor heating overloads and copper-melting arcs.
- ④ Asbestos-sealed varnished cambric provides high dielectric strength and moisture resistance.
- ⑤ Another felted asbestos wall serves as a heat-barrier against high ambient temperatures.
- ⑥ Heatproof, fireproof asbestos braid, resistant to moisture, oil, grease and alkalis, carries the name—ROCKBESTOS A.V.C.

For sizes and specifications refer to McGraw-Hill Coal Mining Catalogs or write to Rockbestos Products Corporation, P. O. Drawer 1102, New Haven, Conn., for Bulletin No. 30-C and a sample.

ROCKBESTOS A.V.C.

The Wire with Permanent Insulation



ORDER FROM THESE JOBBERS—SPECIFY "ROCKBESTOS A.V.C."

BECKLEY, W. VA.: Beckley Mach. & Elec. Co.	EVANSVILLE, IND.: Evansville Elec. & Mfg. Co.	MIDDLESBORO, KY.: Rogan & Rogan Co.
BIRMINGHAM, ALA.: Moore-Handley Hdwe. Co.	FAIRMONT, W. VA.: Fairmont Supply Co.	PITTSBURGH, PA.: Upson-Walton Co.
BLUEFIELD, W. VA.: Superior-Sterling Co.	HUNTINGTON, W. VA.: Banks-Miller Supply Co.	SCRANTON, PA.: Penn. Elec. Engineering Co.
CLEVELAND, OHIO: Upson-Walton Co.	LOTHAIR, KY.: Mine Service Co.	WILLIAMSON, W. VA.: Williamson Supply Co.

HIG
o
rating
for n
vided
ing O
3 by
War
will a
mines
iron,

At
der P
rating
tion
has b
of rat
the p
engag
to th

Go
perm
repa
mines
order

The
terial
ing n
A-1-c
for th
mach
ject
for e
of In
tial m
stone
may
immi

Th
main
A-1-c
A-10
nanc
suppl
with

Sup
exten
opera
in co
has b
Th

Pr

MAT
D

To:
Name
Addre

Seria
Pri
pose
Mater
note

April

WHAT'S NEW IN THE FIELD

Mine Machinery Repair and Maintenance Rated Higher in Amended Order

HIGHER ratings for repair and maintenance of essential mine machinery and lower ratings or complete elimination of ratings for non-essential mining purposes are provided by an amendment of Preference Rating Order P-56 (WP415), announced March 3 by the Director of Industry Operations, War Production Board. The higher ratings will assure continuous production from the mines of such essential materials as copper, iron, coal, etc.

At the same time, Preference Rating Order P-56-a, which formerly assigned a single rating to material entering into the production of mining machinery and equipment, has been amended to permit the assignment of rating or ratings to a producer based on the pattern of ratings on the orders he is engaged in filling by a procedure similar to the Production Requirements Plan.

Gold and silver mines will no longer be permitted to use the ratings assigned for repair and maintenance by P-56. Gold placer mines were not previously included in the order.

The A-3 rating formerly assigned to materials for repair and maintenance of mining machinery has been withdrawn, and an A-1-c rating has been assigned to materials for the repair and maintenance of essential machinery with specified restrictions, subject to a quarterly quota to be established for each mining enterprise by the Director of Industry Operations. Certain less essential mining operations, including sand, gravel, stone, clay, gypsum, talc, soapstone and slate, may use the A-1-c rating only in cases of imminent breakdown.

The A-8 rating assigned to materials for maintenance and repair not covered by the A-1-c rating is continued in effect, and an A-10 rating is assigned to repair, maintenance and operating supplies such as office supplies which are not closely connected with actual production.

Suppliers will hereafter be permitted to extend ratings on orders received from mine operators, and the system of reports required in connection with both P-56 and P-56-a has been simplified.

The orders follow:

Preference Rating Order No. P-56-a

(As amended to March 2, 1942)

MATERIAL ENTERING INTO THE PRODUCTION OF MINING MACHINERY AND EQUIPMENT

To:
Name of Producer:
Address:

Serial No. Date:

PREFERENCE RATING ORDER. For the purpose of facilitating the acquisition of certain Material in the public interest and to promote the national defense, a preference rating is hereby assigned to deliveries to the

above-named Producer and to deliveries to his Suppliers, upon the following terms:

- (a) **Definitions.**
(1) "Producer" means the specific person to whom this Order is addressed above.
(2) "Supplier" means any person with whom a contract or purchase order has been placed for delivery of Material to the Producer or to another Supplier.
(3) "Material" means any commodity, equipment, accessory, part, assembly or product of any kind.
(b) **Assignment of Preference Rating.**—Preference ratings of such grades as will be hereafter specified from time to time by the Director of Industry Operations on Form PD-25A, or on supplementary authorizations, are hereby assigned:

(1) to deliveries to the Producer by his Suppliers of those quantities and kinds of Material which may be specifically authorized for rating by the Director of Industry Operations from time to time on said Form, and which will enter into machinery and equipment or repair parts for delivery to an Operator as defined in Preference Rating Order P-56.

(2) to deliveries to any Supplier of Material which will ultimately be delivered by him or another Supplier to the Producer under the ratings assigned above, or will be physically incorporated into Material which will be so delivered; or which will be used, within the limitations of paragraph (d) (2) hereof, to replace in such Supplier's inventory Material so delivered.

(c) **Persons Entitled to Apply Preference Rating.** The preference rating hereby assigned may, in the manner and to the extent hereby authorized, be applied by:

(1) the Producer;
(2) any Supplier of Material to the delivery of which the preference rating has been applied as provided in paragraph (6).

(d) **Restrictions on Use of Rating.**
(1) **Restrictions on Producer.**

(i) The Producer may apply a rating assigned by this Order only to those quantities and kinds of Material specifically authorized for such rating by the Director of Industry Operations as indicated on the copy of Form PD-25A returned to the Producer, or on such supplementary authorizations as may from time to time be issued to him by the Director of Industry Operations, and only to purchase orders and contracts placed by him prior to the termination of the period specified on said Form, or said supplementary authorization.

(ii) The Producer may not apply a rating to obtain delivery of Material on earlier dates

than required to enable him to maintain his production schedules.

(2) **Restrictions on Supplier.**

(i) No Supplier may apply a rating to obtain Material in greater quantities or on earlier dates than required to enable him to make on schedule a delivery rated hereunder or, within the limitations of (ii) and (iii) below, to replace in his inventory Material so delivered. He shall not be deemed to require such Material if he can make his rated delivery and still retain a practicable working minimum inventory thereof; and if, in making such delivery, he reduces his inventory below such minimum he may apply the rating only to the extent necessary to restore his inventory to such minimum.

(ii) A Supplier who supplies Material which he has in whole or in part manufactured, processed, assembled or otherwise physically changed may not apply a rating to restore his inventory to a practicable working minimum unless he applies the rating before completing the rated delivery which reduces his inventory below such minimum.

(iii) A Supplier who supplies Material which he has not in whole or in part manufactured, processed, assembled or otherwise physically changed may defer applications of a rating hereunder to purchase orders or contracts for such Material to be placed by him until he can place a purchase order or contract for the minimum quantity procurable on his customary terms; provided, that he shall not defer the application of any rating for more than three months after he becomes entitled to apply it.

(e) **Application of Preference Rating.**

(1) The Producer or any Supplier, in order to apply a preference rating assigned hereunder to deliveries to him, must

(i) furnish one copy of Preference Rating Order No. P-56-A, with the attached form of acceptance thereof unsigned, to each of his Suppliers with whom he places a contract or purchase order for Material to the delivery of which he elects to apply a preference rating. After one such copy, regardless of Serial Number, has been furnished to a particular Supplier, no additional copy need be furnished to that Supplier to cover any subsequent application of a preference rating assigned hereunder; and

(ii) endorse on each purchase order or contract which is covered by a rating assigned hereunder, a statement in the following form manually signed by an official duly authorized for such purpose, specifying the rating assigned and appropriate Serial Number or Numbers:

"Preference Rating A" is applied hereto under Preference Rating Order No. P-56-a, Serial No. (s) with the terms of which Order the undersigned is familiar.

(Name of Producer or Supplier)

By
(Duly Authorized Official)

Such indorsement shall constitute a representation to the War Production Board and the Supplier with whom the purchase order or contract is placed that such purchase order or contract is duly rated in accordance herewith. Such Supplier shall be entitled to rely on such representation, unless he knows or has reason to believe it to be false. Any such purchase order or contract shall be restricted to Material the delivery of which is rated in accordance herewith.

(2) A Supplier who has received from two or more Producers or Suppliers endorsed purchase orders or contracts for Material to the delivery of which the same rating has been applied in accordance with this order, may (within the limitations of paragraph (d) hereof) include in a single purchase order or contract any or all of the Material which he in turn requires to make such rated deliveries, but must specify in the endorsement on such single purchase order or contract all of the Serial Numbers contained in the purchase orders or contracts which have been so received by him and to fill which he is applying the preference rating.

(3) In addition to the foregoing require-

Coming Meetings

- American Mining Congress: coal convention, April 27 and 28, Netherland Plaza Hotel, Cincinnati, Ohio.
- Mine Inspectors' Institute of America: annual convention, May 25-27, Lafayette Hotel, Lexington, Ky.
- Illinois Mining Institute: 24th annual boat trip and summer meeting on Str. "Golden Eagle," leaving St. Louis, Mo., June 5; returning June 7.
- Rocky Mountain Coal Mining Institute: annual meeting, June 10, 11 and 12, Hotel Utah, Salt Lake City, Utah.

ments, a Supplier (but not a Producer), before he first applies the preference rating assigned hereunder to deliveries to him, must accept Preference Rating Order No. P-56-a by executing the form of acceptance attached at the end hereof, and file it with the War Production Board. No additional acceptance need be filed for any subsequent application of Preference Rating Order No. P-56-a, regardless of the Serial Number under which or of the name of the Producer to whom it is issued.

(f) *Restrictions on Deliveries by Producer*—Material obtained by the Producer on a preference rating assigned pursuant to this Order shall be delivered by the Producer only to an Operator as defined in Preference Rating Order P-56 for use in accordance with the provisions and restrictions of said Order.

(g) *Records*—In addition to the records required to be kept under Priorities Regulation No. 1, the Producer, and each Supplier placing or receiving any purchase order or contract rated hereunder, shall each retain, for a period of two years, for inspection by representatives of the War Production Board, endorsed copies of all such purchase orders or contracts, whether accepted or rejected, segregated from all other purchase orders or contracts or filed in such manner that they can be readily segregated for such inspection.

(h) *Reports*—The Producer, and each Supplier who applies a preference rating assigned hereunder, shall file such reports as may be required from time to time by the War Production Board.

(i) *Communications to War Production Board*—Acceptances of this Order, all reports required to be filed hereunder, and all communications concerning this Order, shall, unless otherwise directed, be addressed to:

"War Production Board,
Washington, D. C. Ref.: P-56-a."

(j) *Violations*—Any Person who wilfully violates any provision of this Order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this Order may be prohibited from receiving further deliveries of any Material subject to allocation, and such further action may be taken as is deemed appropriate, including a recommendation for prosecution under Section 35 (A) of the Criminal Code (18 U.S.C. 80).

(k) *Revocation or Amendment*—This Order may be revoked or amended at any time as to the Producer or any Supplier. In the event of revocation, deliveries already rated pursuant to this Order shall be completed in accordance with said rating, unless the rating has been specifically revoked with respect thereto. No additional applications of the rating to any other deliveries shall thereafter be made by the Producer or Supplier affected by such revocation.

(l) *Applicability of Priorities Regulation No. 1*—This Order and all transactions affected thereby are subject to the provisions of Priorities Regulation No. 1, as amended from time to time, except to the extent that any provision hereof may be inconsistent therewith, in which case the provisions of this Order shall govern.

(m) *Effective Date*—This order shall take effect on the date specified in the heading hereof, and shall continue in effect until July 1, 1942.

Issued this 2d day of March, 1942.

J. S. KNOWLSON,
Director of Industry Operations.

**SUPPLIER'S ACCEPTANCE OF PREFERENCE RATING ORDER NO. P-56-a
MATERIAL ENTERING INTO THE PRODUCTION OF MINING MACHINERY AND EQUIPMENT**

(Before signing this acceptance, read carefully the terms of the foregoing Order.)

To: War Production Board
Washington, D. C.

Ref. P-56-a

The undersigned has received a purchase order or contract containing an endorsement in the form provided in Preference Rating Order No. P-56-a. For the purpose of applying to deliveries to the undersigned the rating assigned by said Order, the undersigned hereby accepts said Order and agrees to be bound by the terms and conditions thereof.

Dated this 2d day of March, 1942.

Legal Name of Supplier.

By _____
Signature of Duly Authorized Official.
(Title)

Address of Supplier.

(Sec. 35(A) of the Criminal Code (18 U. S. C. 80) makes it a criminal offense to make a false statement or representation to any Department or Agency of the United States as to any matter within its jurisdiction.)

INSTRUCTIONS

The requirements for furnishing copies of the foregoing Order to Suppliers and for execution of the above form of acceptance by Suppliers are set out in detail in paragraph (e) of the Order. Copies may be obtained for such purpose from the War Production Board, Washington, D. C.; or Producers or Suppliers required to furnish the copies may make them by photo-effect or similar photographic process. Such copies must be identical in size and every other respect with the Order and acceptance as issued by the War Production Board.

Copies furnished to Suppliers by Producers or other Suppliers, pursuant to the requirements of paragraph (e) of the foregoing Order, should have the form of acceptance left blank for execution by the Suppliers to whom they are furnished.

NOTE—Amendment No. 1 of Priorities Regulation No. 8, issued March 19, restores the requirements that reports be submitted in accordance with the terms of Preference Rating Order P-56. Reports on specified forms will no longer be required in connection with the mining machinery order, P-56-a.

**Keeping Step With Coal Demand
Bituminous Coal Stocks**

	Thousands Net Tons Feb. 1 1942	P.C. Change	
		From Jan. 1 1941	From Feb. 1 1941
Electric power utilities	12,660	— 1.4	+13.9
Byproduct coke ovens	7,824	—12.1	—20.9
Steel and rolling mills	959	— 0.9	+ 2.6
Railroads (Class 1)	9,482	— 7.3	+52.0
Other industrials*	19,360	— 5.4	+39.0
Total	50,285	— 5.8	+19.4

Bituminous Coal Consumption

	Thousands Net Tons Jan. 1942	P.C. Change	
		From Dec. 1941	From Jan. 1941
Electric power utilities	5,918	+ 0.4	+23.8
Byproduct coke ovens	7,412	+ 0.8	+ 4.9
Steel and rolling mills	1,019	+ 3.5	— 2.3
Railroads (Class 1)	9,689	+ 5.0	+18.5
Other industrials*	14,436	+ 1.4	+11.2
Total	38,474	+ 3.4	+14.6

* Includes beehive ovens, coal-gas retorts and cement mills.

Coal Production

Bituminous		
Month of February, 1942, net tons	43,840,000	
P.C. increase over Feb., 1941	5.1	
Jan.-Feb., 1942, net tons	92,380,000	
P.C. increase over Jan.-Feb., 1941	7.6	
Anthracite		
Month of February, 1942, net tons	4,739,000	
P.C. increase over Feb., 1941	1.5	
Jan.-Feb., 1942, net tons	9,271,000	
P.C. decrease from Jan.-Feb., 1941	1.5	

**Sales of Domestic Coal Stokers
Vs. Oil Burners**

	Coal Stokers	Oil Burners
January, 1942	6,153	13,007
P.C. change from Jan., 1941	+15.3	—15.6

Index of Business Activity*

Week ended March 14 (preliminary)	175.2
Percent change from month ago	+2.15
Percent change from year ago	+16.09

* Business Week, March 21.

Electrical Power Output†

Week ended March 14, kw.-hr.	3,357,444,000
Percent change from month ago	—1.9
Percent change from year ago	+12.6

† Edison Electric Institute.

**TITLE 32—NATIONAL DEFENSE
CHAPTER IX—WAR PRODUCTION BOARD
SUBCHAPTER B—DIVISION OF INDUSTRY OPERATIONS**

Part 982—MINES

**PREFERENCE RATING ORDER P-56
(As amended to March 2, 1942)**

Sec. 982.1 is hereby amended to read as follows:

982.1. **PREFERENCE RATING ORDER.** For the purpose of facilitating the acquisition of material for continued and expanded operation of Mining Enterprises in the public interest and to promote the national defense, preferred ratings are hereby assigned to deliveries of such material upon the terms hereinafter set forth:

(a) Definitions.

(1) "Person" means any individual, partnership, association, business trust, corporation, governmental corporation or agency, or any organized group of persons whether incorporated or not.

(2) "Mining Enterprise" means (i) any plant actually engaged in the extraction by surface, open-pit, or underground methods, or in the beneficiation, concentration, or preparation for shipment of the products of mining activity, but not including any plant more than 30 percent of the production of which in dollar value consists of gold and/or silver.

(ii) any plant wholly engaged in the processing and burning of refractories;

(iii) any prospecting enterprise for the discovery or exploration of new or additional mining prospects.

(3) "Operator" means any person operating a Mining Enterprise, who holds a Serial Number issued in accordance with the provisions of paragraph (b).

(4) "Supplier" means any person with whom a purchase order or contract has been placed for delivery of material to an Operator or to another Supplier.

(5) "Material" means any commodities, equipment, accessories, parts, assemblies, or products of any kind.

(6) "Maintenance" means minimum upkeep necessary to continue the working condition of equipment used by an Operator in the operation of a Mining Enterprise at its then current rate of production or operation.

(7) "Repair" means the restoration of property or equipment used by an Operator in the operation of a Mining Enterprise to a sound working condition after wear and tear, damage, destruction, or failure of parts or the like have made the property or equipment unfit or unsafe for service.

(8) "Operating Supplies" means material which is essential to and consumed in the operation of property and equipment used by an Operator in the operation of a Mining Enterprise and which is generally carried as Operator's stores and charged to operating expense account. The term does not include raw materials which enter into or form part of the finished product.

(b) Certification of Mining Enterprises.

(1) *Domestic Mining Enterprises*—The agency designated by the Governor or other chief executive office of each State, territory, or possession of the United States, including the Commonwealth of the Philippines, shall furnish to the War Production Board a certificate setting forth the names of the persons operating Mining Enterprises within such State, territory, or possession. The War Production Board will thereupon issue a Serial Number or Numbers to each such person who may be approved by the Director of Industry Operations. Any person aggrieved by failure or refusal of a State agency to certify him as an Operator may apply in writing to the Director of Industry Operations for issuance of a Serial Number. The Director of Industry Operations may thereupon take such action as he deems appropriate. Serial Numbers may be cancelled by the Director of Industry Operations in appropriate cases.

(2) *Foreign Mining Enterprises*—The Director of Industry Operations may, in his discretion, issue a Serial Number or Numbers to a person operating a Mining Enterprise outside the limits of the United States, its territories, and possessions and may cancel any such Serial Number.

(3) *Standards*—In issuing, denying, or cancelling Serial Numbers, the Director of Industry Operations will consider the importance to National defense of the present and prospective output of materials to be produced, the consumption of essential materials by the Mining Enterprise in its operations, the necessity to the Mining Enterprise of obtaining priorities assistance, and the available alternative methods of obtaining such assistance.

(c) *Assignment of Preference Ratings*—Subject to the terms of this Order, the following preference ratings are hereby assigned: provided, that no preference rating is assigned to the delivery of any machinery or

COOPERATION ON YOUR DRILLING REQUIREMENTS . . .

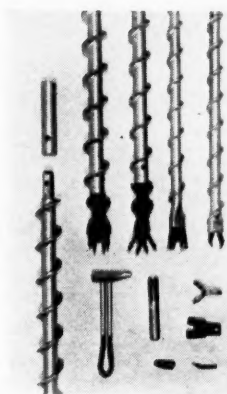
In line with its past record of service to the mining industry, Central Mine Equipment Company is making every effort to aid operators in meeting the unprecedented demands of Victory production. These efforts are handicapped by (1) Priorities, and the fact that the metals required to keep mechanized drilling up to the pace of mechanized cutting and loading, are also needed for planes, tanks, guns, etc., (2) Long and uncertain deliveries, and (3) Lack of specific estimate of your future requirements. You can help us, yourselves and the WPB by filling out the form below now.



Between You and Ourselves

**A
HELPFUL
STEP**
*in Victory
Production*

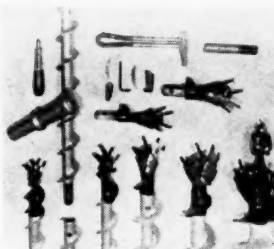
STAGGERED TOOTH TOOLS



Tools for Hand Held Drills

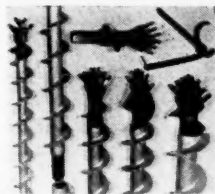
Our Safety Hex shank and drill socket combination puts complete feed control and a new feeling of security in the hands of the driller. No driller, once having experienced this new security, would be without it. Our numerous types give you the best answer to your problems.

Among the features of COALMASTER Tools are safety to the operators, speed that is so important today, and lowest drill maintenance needs which means less lost time and production. These tools ease the burden on the men who operate your drills thereby making them more efficient over longer periods.



Tools for Post and Machine Mounted Drills

The COALMASTER line of drilling tools is made in complete sets specifically designed for all powder sizes from 1 1/4" to 2", all CARDOX and AIRDOX shells from 1 3/4" to 3 9/16", and all Hydraulic cartridge requirements.



Tools for Strip Pit Drills

The Hexanspeed Coupling is a quick make and break auger coupling that has reduced auger changing time to the minimum and has speeded up hole production 10% to 30%. Proper drill head, bit and auger design combine to place hole production on a new level of economy.

Central Mine Equipment Company
St. Louis, Missouri

For Customers

Item No. & Length	QUANTITY 1942 — Quarters		
	2nd	3rd	4th
Augers			
Augers			
Augers			
Augers			
Augers			
Augers			
Bits			
Bits			
Bits			

For Prospective Customers

Here are our drilling facts. Please make recommendations on type of tools we will need. We would like to try out your tools now and if we find we can get the coal out quicker with them, we will estimate our requirements for the 2nd and 3rd quarters of 1942.

1. DRILL make type hand held, post mounted, machine mounted length feed bar threads per inch.
2. inch diameter (powder) (steel shell) (hydraulic cartridge) (dynamite).
3. Depth of hole feet.
4. Present auger lengths
5. Present type of auger shank
6. Present style of drill head and bit: Make style no.
7. Objections to present drilling tools
8. We are drilling Coal, Clay, Shale, Slate it is easy, medium, hard; dry, damp, wet; pure bands, streaks. Drillings break, chip, pulverize, choke, stick. Other characteristics

Company Location

Name Title

CENTRAL MINE EQUIPMENT CO., St. Louis, Missouri
"The Drill Bit People"

"BROWNIES"

(BOTH ABOVE GROUND and BELOW)



ARE SPEEDING

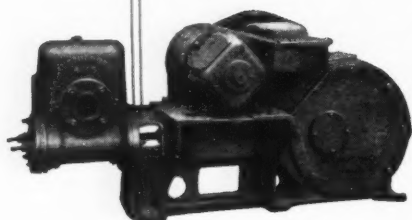
"PRODUCTION for

VICTORY"

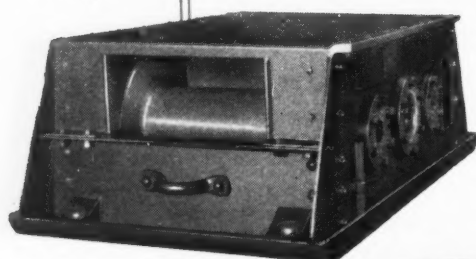
IN THE NATION'S MINES!



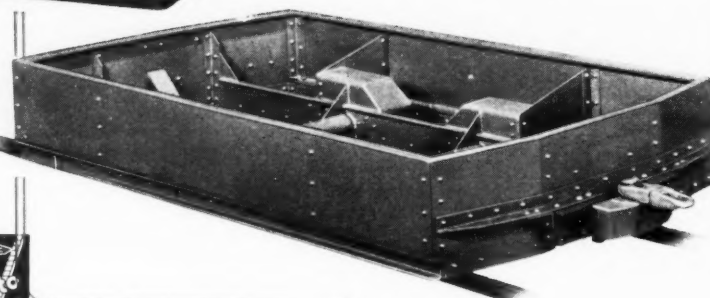
B C Tubing Blower



4 x 5 Gathering Pump



HKM Car Spotting Hoist



Maximum Capacity Mine Car



THE BROWN-FAYRO COMPANY

940 ASH STREET . . . JOHNSTOWN, PA.

● Playing a major role in the Nation's war efforts are its coal mines . . . Coal furnishes the power for making the instruments of war.

Naturally every means to speed production, yet hold costs to a minimum, is being explored. An important step in this direction is to have equipment available when it is needed. It is equally important to use the best equipment . . . machines that are strong, efficient, and built for their particular jobs.

To help you get the machines when they are needed we ask that you tell us as accurately as possible what you will need during this year and next, and when you will need it. Give this information to our representative when he calls or write us a letter—but to be of value it should be done promptly.

To help you select the best machines for the job we suggest that you visit us at the Coal Convention, April 27 and 28.

Hoists—Room, Car Spotting, Layer Loading
Pumps
Sheaves
Oil Spray Systems
Tubing Blowers
Mine Cars and Wheels
Retarders
Rerailers

equipment, or repair parts therefor, unless such machinery and equipment are used primarily to maintain or to increase the existing production of the Mining Enterprise, and not primarily to reduce operating costs. Nothing herein contained shall prevent the use of any other or higher rating to which any person may be entitled by reason of any other Preference Rating Certificate or Order.

(1) As to Deliveries to an Operator.

(i) A-1-a to deliveries of material for repair of property and equipment used in and essential to the operation of a Mining Enterprise, when and only when there has been an actual breakdown or suspension of operations because of damage, wear and tear, destruction or failure of parts, or the like, and the essential material is not otherwise available.

(ii) A-1-c to deliveries of repair parts for machinery and equipment of the types listed in Schedule A hereto; provided, that such repair parts are for use in a Mining Enterprise less than 30 percent of the production of which in dollar value for the previous calendar quarter was derived from any one or more of the following:

Sand (except foundry sand), gravel, crushed stone, and slag, including all commercially recognized forms of these products;

Clay of all types, except those used for refractories and ceramics for electrical use;

Building and ornamental stone of all types; Gypsum, talc, soapstone, slate (except for electrical use), and all raw material for the manufacture of lime and calcareous cements.

Such rating shall be applied by any Operator only to deliveries in any calendar quarter of a quota consisting of such dollar value of repair parts as may be expressly authorized by the Director of Industry Operations after application by such Operator in form prescribed by the Director of Industry Operations. For the first calendar quarter of 1942 such quota shall be the dollar value of repair parts which bears the same ratio to the dollar value of repair parts delivered to the Operator in the last calendar quarter of 1941 as the dollar value of the Operator's production in the first calendar quarter of 1942 bears to the dollar value of the Operator's production in the last calendar quarter of 1941.

(iii) A-1-c to deliveries of repair parts for essential productive facilities to other Mining Enterprises and/or for other types of machinery and equipment up to the minimum required to make reasonable advance provision to avert an actual breakdown or suspension as described in paragraph (c) (1) (i).

(iv) A-8 to deliveries of material for other repairs to, for maintenance of, and for operating supplies for, property and equipment used in and essential to the operation of a Mining Enterprise.

(v) to deliveries of essential machinery and equipment, whether or not included in Schedule A, such preference ratings as the Director of Industry Operations may from time to time assign to particular orders for such equipment submitted to him for approval in the manner described in paragraph (e) (2) hereinafter.

(vi) A-10 to deliveries of material for all other repairs, maintenance and operating supplies.

(2) As to Deliveries to a Supplier—Delivery of material which will be delivered (or physically incorporated into material which will be delivered) to an Operator under any preference rating assigned by or pursuant to paragraph (c) (1) are assigned the same preference rating as that assigned to the delivery to the Operator.

(d) Persons Entitled to Apply Preference Ratings—The preference ratings hereby assigned may be applied by

(1) An Operator, or

Bureau of Mines Approvals

Three approvals of permissible equipment were issued by the U. S. Bureau of Mines in February, as follows:

Jeffrey Mfg. Co.—Type 61-EW elevating conveyor; 5-hp. motor, 250 volts, d.c.; Approval 391; Feb. 7.

Joy Mfg. Co.—Type T1-3P mining-machine truck; two 4-hp. motors, 250 and 500 volts, d.c.; Approvals 443 and 443A; Feb. 14.

Jeffrey Mfg. Co.—Type 61-AM room conveyor; 10-hp. motor, 220 volts, a.c.; Approval 444; Feb. 17.

(2) A Supplier to enable it to make to an Operator or to another Supplier deliveries on purchase orders or contracts endorsed or otherwise identified pursuant to paragraph (e).

(c) *Application of Preference Ratings.*

(1) *Application of A-1-a or A-1-c Rating by Operator*—An Operator, in order to apply the A-1-a preference rating assigned by paragraph (c) (1) (i) or the A-1-c preference rating assigned by paragraph (c) (1) (iii) must communicate with the War Production Board, Washington, D. C., Ref.: P-56, describing the material needed for emergency repair and the nature of the emergency, or the reasons why advance provision is necessary to avert breakdown or suspension, and such other information as may be required. The Director of Industry Operations will notify such Operator, whether, and to what extent, its application is approved, and a copy of such notification shall be furnished by the Operator to its Supplier to evidence the A-1-a or A-1-c rating.

(2) *Application of Ratings by an Operator to Deliveries of Machinery or Equipment*—An Operator, in order to apply the ratings assignable under paragraph (c) (1) (v), must communicate with the War Production Board, Washington, D. C., Ref.: P-56, describing the machinery or equipment needed and the reasons why such machinery or equipment is essential for the proper operation of the Mining Enterprise. The Director of Industry Operations will notify such Operator whether its Application is approved, and if approved, shall assign a Preference Rating thereto; a copy of such notification and assignment of rating shall be furnished by the Operator to his Supplier.

(3) *Standards*—In acting on any application pursuant to paragraph (a) (1) or (2), the Director shall consider the importance to national defense of the material to be produced by the machinery, equipment, or other material for which rating is requested, and the consumption of scarce materials in the construction thereof.

(4) *Application of Other Ratings by Operator or Supplier*—An Operator in order to apply the A-1-c preference rating assigned by paragraph (c) (1) (ii), the A-8 preference rating assigned by paragraph (c) (1) (iv), or the A-10 rating assigned by paragraph (c) (1) (vi), or a Supplier in order to apply any preference rating assigned by paragraph (c) (2), must endorse the following statement on the original and all copies of the purchase order or contract for such material, signed by a responsible official duly designated for such purpose by such Operator or Supplier:

"Materials for a Mining Enterprise, Rating A-... under Preference Rating Order P-56, Serial No. and in compliance therewith.

(Name of Operator or Supplier)

By.....
(Authorized Signature)"

If the material is for export outside the limits of the United States, its territories and possessions, the Commonwealth of the Philippines, or the Dominion of Canada, such endorsement shall also contain the sentence:

"This material is for export and is covered by Export License No. dated

Such purchase order or contract so endorsed shall be delivered to the Supplier of such material. Such endorsement shall constitute a representation to the War Production Board and the Supplier with whom the purchase order or contract is placed that such purchase order or contract is duly and properly rated in accordance herewith. Such Supplier shall be entitled to rely on such representation, unless he knows or has reason to believe it to be false. Any such purchase order or contract shall be restricted to material the delivery of which is rated in accordance herewith. With respect to any purchase order or contract for such material placed before the effective date of this Order, such preference rating may be applied by delivering to the seller a duplicate copy of such purchase order or contract so endorsed.

(5) An Operator or Supplier placing any such rated purchase order or contract, and the Supplier of the material covered thereby, must each retain endorsed copies of all such purchase orders or contracts, and certificates and notifications made or received pursuant to this paragraph (e), for a period of two years from the date thereof, for inspection by authorized representatives of the War Production Board.

(6) *Restrictions on Deliveries by Supplier*—No Supplier shall deliver machinery, equipment, or repair parts to an Operator or another Supplier under any rating

(i) unless such Supplier has received from such Operator or such other Supplier all certificates and notifications required by paragraph (e).

CLARKSON Universal '24

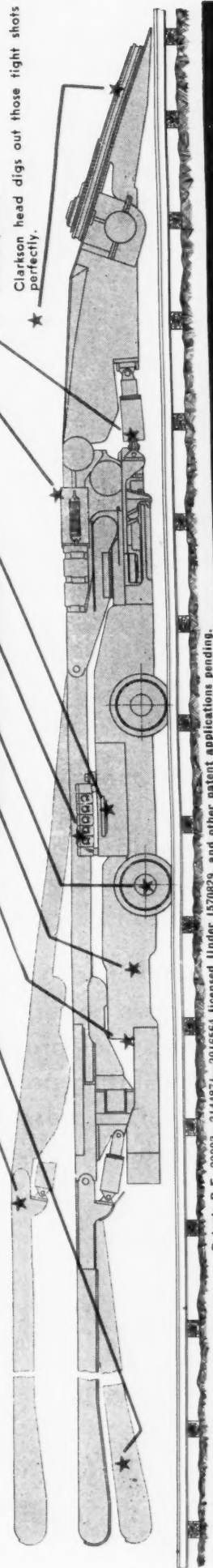
A Real Digger .. for High and Low Coal ..

MORE TONNAGE— FASTER!

Lowest track loader on wheels! Rugged. Strong. Wide range. Adjusts vertically or horizontally quick as a wink! Built for 38" coal up, will load coal, slate, rock, speedy on room cleanup, pillar and rib extraction, development. This is the equipment you need for "all out" Victory production! Send for circular.

FEATURES THAT LOWER LOADING COSTS

- ★ Conveyor in traveling position well below trolley wires even in very low coal.
- ★ Clarkson (patent applied for) rear conveyor raised in a second to any height.
- ★ 50 H.P. motor produces power for entire machine.
- ★ Heavy 2 1/2 inch steel plate for side frames.
- ★ Complete central unit quick operating hydraulic control.
- ★ Cast steel wheels with 3 3/4" alloy steel axles.
- ★ Operator's seat located well back from face and under timbers.
- ★ Highest point of conveyor pan only 23 inches from rail.
- ★ Large hydraulic cylinders spell low hydraulic pressure.
- ★ Clarkson head digs out those tight shots perfectly.

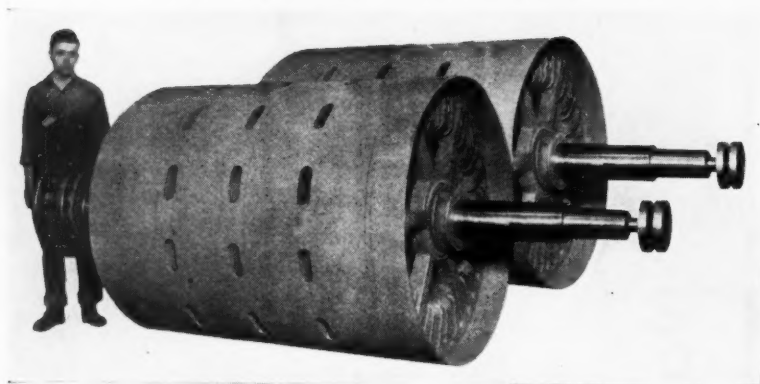


Patents R. E. 20883—2144671—2016564 licensed Under 1570829, and other patent applications pending.

THE CLARKSON MANUFACTURING COMPANY

NASHVILLE
ILLINOIS

Not 1 but 2 WORLD'S LARGEST!



We design and manufacture magnetic pulleys in all sizes, large and small, as part of our daily production.

These two happen to be interesting, not only for their tremendous proportions, 48" diameter by 64" length, but also from the fact they go into one of the country's largest copper mining and reduction plants.

You'll find Stearns Magnetic air-cooled (for more power) pulleys in outstanding coal mining and processing operations everywhere, fitting proof of a better engineered product, a most for the dollar piece of magnetic equipment.



Should you have a problem involving the use of magnetic pulleys, write for Bulletin 302. No obligations. Get the facts from a pioneer manufacturer.

STEARNS MAGNETIC MANUFACTURING CO.

661 S. 28th St. Milwaukee, Wis.
SEPARATORS—DRUMS—ROLLS
CLUTCHES—BRAKES
SPECIAL MAGNETS



(ii) if such Supplier knows or has reason to believe that such material is not properly rated under the terms of this Order.

A Supplier must report forthwith to the War Production Board the details of any such attempt to apply any rating in violation of the terms of this Order.

(f) *Restrictions on Application of Rating.*
(1) The preference ratings hereby assigned shall not be applied

(i) unless the material to be delivered cannot be secured when required without such rating;

(ii) to obtain deliveries greater in quantity or on dates earlier than required for the operation, maintenance, or repair of the property or equipment used by an Operator in (and essential to) the operation of a Mining Enterprise;

(iii) by a Supplier to obtain material in excess of the amount necessary to make rated deliveries.

(g) *Restrictions on Inventory*—No Operator shall accept deliveries (whether or not rated pursuant to this Order) of operating supplies or other material which will increase such Operator's inventory of such operating supplies or other material to an amount greater than the minimum necessary for the efficient operation of his business, and the ratio of inventory to current production shall in no event exceed the ratio of average inventory to average production for the years 1938, 1939, and 1940.

(h) *Resale of Operating Supplies and Other Material Prohibited*—Except with specific permission of the Director of Industry Operations, no Operator shall resell any operating supplies or other materials (whether or not obtained pursuant to rating assigned by this Order) except to another Operator.

(i) *Conservation and Standardization*—Every person affected by this Order shall use his best efforts to effectuate conservation of materials by elimination, simplification, or standardization of types, sizes, or forms, or otherwise, and to cooperate in any program developed for such purpose by the War Production Board. The Director of Industry Operations may from time to time issue specific directions as to conservation, elimination, and standardization.

(j) *Relief*—In case the productivity or sound working condition of any Mining Enterprise is adversely affected by any provision or application of this Order or by inability to obtain essential operating supplies or other materials, the person operating such Mining Enterprise may apply for relief to the Director of Industry Operations. The Director of Industry Operations may thereupon take such action as he deems appropriate.

(k) *Records, Audit, and Reports*—Each Operator and each Supplier shall keep and preserve for a period of not less than two years accurate and complete records of all transactions affected by this Order and shall submit from time to time to audit and inspection by duly authorized representatives of the War Production Board. Each Operator and each Supplier shall execute and file with the War Production Board or other designated agency, such reports and questionnaires as the War Production Board shall from time to time require. Until otherwise directed, each Operator shall file with the designated State Agency on or before the 10th day of each month a report on form PD-119 of purchases made during the preceding month pursuant to the ratings granted by this Order.

(l) *Violations*—Any person affected by this Order who violates any of its provisions, or a provision of any other Order, regulation, or other directive of the War Production Board may be deprived of priorities assistance, or subjected to such other or further action as the Director of Industry Operations may deem appropriate.

(m) *Revocation or Modification*—This Order may be revoked or modified by the Director of Industry Operations at any time as to any Operator or Supplier. In the event of revocation, or upon expiration of this Order, deliveries already rated pursuant to this Order shall be completed in accordance with said rating, unless the rating has been specifically revoked with respect thereto. No additional applications of this rating to any other deliveries shall thereafter be made by the Operator or Supplier affected by said revocation or expiration.

(n) *Amendment of Prior Order*—The provisions of Preference Rating Orders P-22 or P-100 shall not apply to deliveries to which a preference rating is assigned by this Order.

(o) *Effective Date*—This Order shall take effect immediately and shall continue in effect until revoked.

Issued this 2d day of March, 1942.

J. S. KNOWLSON,
Director of Industry Operations.

**"An equipment breakdown would mean
a plant shutdown—so we use Gulf
Quality Lubricants"**

Says the Superintendent of this coal cleaning plant



**"GULF LUBRICATION
is effective preventive maintenance"**

AT a time like this, we can't afford to take any chances with our lubrication," says the Superintendent of this coal cleaning plant. "A shutdown of any unit of equipment would mean a plant shutdown—so we use the quality lubricants recommended by a Gulf engineer. As a result, we're getting effective preventive maintenance."

This superintendent is right! For continuous production, every mine and plant depends on uninterrupted service from important units of equipment. Breakdowns interfere with production schedules—and are particularly serious today, when spare parts are increasingly difficult to obtain. More than ever,

you need the protection afforded by the best lubrication practice—the kind of lubrication practice you can install by following Gulf Engineering recommendations. Investigate—call in a Gulf engineer now and ask him to recommend the proper application of lubricants exactly suited to each piece of equipment and each moving part. His knowledge and experience can profitably be applied to your problems.

The services of a Gulf engineer—and the Gulf line of 400 quality oils and greases—are quickly available to you through 1200 warehouses in 30 states from Maine to New Mexico. Write or 'phone your nearest Gulf office today.

**GULF OIL CORPORATION
GULF REFINING COMPANY**



**GULF BUILDING
PITTSBURGH, PA.**

Let's Keep Plenty of Them Flying...



EVERY ton of steel that can be diverted to the production of actual fighting instruments—planes, tanks, ships, guns—brings us closer to the day of Victory.

You can save steel by using longer - lasting Preformed "HERCULES" (Red-Strand) Wire Rope... a rope of highest quality not only as to material, but fabrication as well... a rope that delivers more hours of work per pound of steel.



Add to this saving by selecting your wire rope of the specific size, type, grade and construction that best meets *your* requirements. Inasmuch as "HERCULES" (Red-Strand) Wire Rope is furnished in both Round Strand and Flattened Strand constructions, as well as in the Standard and Preformed types, there is, in this one grade, a *right* rope for every heavy-duty purpose.

In order to help all wire rope users obtain maximum service from their wire rope, we publish an illustrated booklet "Practical Information on the Use and Care of Wire Rope". We would be glad to send a complimentary copy to anyone interested.

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS

5909 KENNERLY AVENUE

ESTABLISHED 1857

ST. LOUIS, MISSOURI, U. S. A.

NEW YORK ✓ ✓ ✓ 90 West Street
CHICAGO ✓ ✓ 810 W. Washington Blvd.
DENVER ✓ ✓ 1554 Wazee Street



SAN FRANCISCO ✓ ✓ 520 Fourth Street
PORTLAND ✓ ✓ 914 N. W. 14th Avenue
SEATTLE ✓ ✓ 3410 First Avenue South

SCHEDULE "A"

As to all machines listed below, the rating provided herein likewise applies to equipment items, accessories, and tools customarily sold with such machines.

Aerial tramway equipment
Air compressors for mine use
Air distribution equipment
Assaying and testing laboratory equipment at the mine
Ball-casting machines
Boxcar loaders
Cages and skips
Car dumpers—rotary or end
Equipment for Cleaning plants
Equipment for Concentrating plants
Conveyors—shaking, belt, chain, or gravity type, including duckbills and other self-loading heads
Cutting machines—cable reel and self-propelling transportation trucks therefor
Diamond core drilling machines
Dragline dredges, excavators, and scraper units
Dredges—continuous bucket, including pumps
Drills and drilling machines, power driven, and reconditioning equipment therefor
Dust control equipment
Electrical equipment for mine transportation and power
Hoists—including room hoists and car pullers
Hydraulic monitors, with feed pipe and fittings
Jacks for lifting and roof support
Lamps—mine, miners', safety and ore-exploration types
Locomotives for mine use
Loaders, mobile, including mucking machines
Equipment for Milling plants
Mine cars, track or trackless
Pit-car loaders and elevating conveyors
Equipment for Preparation plants
Pumps, pipe and fittings for mine drainage or material transport
Rock dusting equipment
Safety and defense equipment
Sand dryers
Scraper loaders
Sheaves and sheave blocks
Shovels, power
Shuttle cars, tracks or trackless
Slusher hoists and scrapers
Steel sections for support of mine openings
Storage batteries for mine use
Tanks and bins for storage of mine products
Tipples and head frames
Track and track accessories for mine transportation
Equipment for Treating plants
Trucks, tractors, and trailers for mine use
Ventilation equipment
Waste disposal equipment
Weighing equipment, including automatic devices
Wire rope for haulage and hoisting

E. R. Burke Heads New Group Of Southern Operators

A new organization known as the Southern Coal Producers' Association was formed March 17 at Cincinnati to represent southern Appalachian coal producers in labor and competitive matters. Edward R. Burke, former Senator from Nebraska but now practicing law in Washington, heads the new group; L. E. Tierney, Bluefield, W. Va., was named treasurer. Offices will be maintained in Washington and, later, probably in Cincinnati.

The new organization represents a merger of 14 district operators' associations embracing about 200 individual companies in southern West Virginia, eastern Kentucky and Virginia. Both high- and low-volatile fields are included. Activities formerly carried on through a committee set-up headed by L. Ebersole Gaines, president, New River Co., are to be taken over.

Among about 40 southern West Virginia operators present at the organization meeting in Cincinnati were James D. Francis, president, Island Creek Coal Co.; C. E. Hamill, president, Sycamore Coal Co.; John A. Kelly, of Huntington; H. A. McCallister, of Logan, and R. E. Salvati, vice president and general manager, Island Creek Coal Co.

British Safety in Mines Research Board Reports Findings for the Year 1940

BECAUSE of the exigencies of the War, the Safety in Mines Research Board of Great Britain has only just made its report on progress in 1940. In that year it investigated the use of mixtures of salt with rock dust in suppressing coal-dust explosions and found that waterproofed rock dusts mysteriously deprived salt of some of its natural thirst and of some of its perverse tendencies to cake and liquefy. Four ways to test the quantity of inert dust in a mine-dust mixture—the volumeter, bulk density, color and chemical methods—all were tried, and the first and last methods approved, though the standard chemical method had to be revised.

Steel posts that flash when struck and may ignite gas, and dangers of flameproof machinery were studied, as also the failures of that recent and perhaps greatest improvement in true explosives, the sheathed cartridge. The board also proved that a shock wave could ignite firedamp and tested the strength and suitability of all the various kinds of roof support that painful isolation by the War has made Great Britain substitute for material formerly used for such purposes. Other inquiries which will not be discussed here were those concerning safety lamps, subsidence and roof weighting, replacement of timber by steel, mine-car couplings and wire rope.

So Little Dust Does It

A Pennyweight of Dust to a Cubic Foot of Air—A pennyweight is a twentieth part of an ounce, and that much dust is the minimum quantity that will propagate an explosion, so a mine cannot fail to make enough dust which, if put in suspension, will furnish a flame with an explosive quantity of fuel. At one mine it was found that a good spray located where the coal was transferred to the mother conveyor suppressed more dust than when used at the point where the coal was loaded from that conveyor into cars. With sprays at the loading point, shrouding the car is the main difficulty. [The best way, at any rate at American mines; where a little water does not harm the floor, is to locate the spray at the face, and this American experience seems duplicated by British determinations.]

Mix Dusts to Get Desired Qualities—At least two qualities are needed in a dust for suppressing of a coal-dust explosion: (1) indisposition to cake, for a caked dust will be slow or unable to rise in the presence of an incipient explosion and (2) ability to quench the flame when so raised. In quenching a fire, salt has been found much more active than rock dust, but it tends to cake. Perhaps by mixing the dust that is most active in

quenching flame with a noncaking dust, a mixture might be obtained that would be prompt to rise and effective when raised. That is the solution being sought by the Safety in Mines Research Board.

Such a suggested combination is Naclite, made of 80 percent common salt, 18 percent talc and 2 percent magnesium carbonate *levis*. It was found that very fine Naclite dust has an efficacy twenty times as great as the standard "Delafila" dust, whereas ground limestone was only 1.5 times as efficacious, and ground gypsum 2.5 times as effective as that standard dust. Another salt mixture, a waste product in the manufacture of table salt and containing 50 percent of sodium chloride, was four times as efficient as Delafila dust. But, as they now are, such dusts cake and even turn to liquid unless the air in which they are kept is fairly dry.

Coal Dust Has High Dispersibility—Coal dusts proved to be more readily dispersible into a cloud than rock dusts, but in this respect Naclite and a chemically prepared gypsum were superior even to coal dust. Exposure of gypsum and magnesium limestone dusts for several days to an atmosphere nearly saturated with moisture caked the dust to such a degree as to reduce the ease with which a cloud of dust could be formed. A magnesium-limestone dust, obtained as a byproduct from an asphalt plant, had a high dispersibility because of the small quantity below 10-micron diameter.

Rock Dust Keeps Salt Dry—One mine experimenting with limestone containing 10 percent of sodium chloride noted that when spread in some of the underground roadways it continued to be satisfactorily dispersible. Such a mixture presumably would have an efficacy about twice that of limestone dust alone—that is, about the same as gypsum dust. It was found that, though mixtures of gypsum dust or of fuller's earth with 10 percent of sodium chloride caked badly when exposed to atmospheres well below the critical humidity for the deliquescence of sodium chloride (75 percent), a similar mixture with limestone dust did not cake until the critical humidity (74-75 percent) was reached.

Palmitized Limestone Helps

When water-repellent limestone (waterproofed by incorporation of a little palmitic acid during milling) was used to make the mixture, no moisture was absorbed even in atmospheres very slightly above the critical humidity. In somewhat more humid atmospheres, moisture was slowly absorbed and the salt particles liquefied; the dust swelled in consequence, but, even four months later, it was freely dispersible. Whether this curi-

AIR VELOCITIES THAT WILL LIFT DUST FREELY FROM A DEPOSIT

Nature of Dust	Percent Passing 240 Mesh B.S. Test Sieve	Fresh Deposit Ft. per Minute	Weathered Deposit
Flue-gas washery sludge.....	82	3.100	3.150
Precipitated gypsum.....	91	1.900	4.100
Ground limestone.....	75-80	4.750	4.750
Ground limestone.....	63	4.750	4.750
Flue dust from cyclone.....	90	1.300	2.500
Flue dust from settling chamber.....	65	1.000	3.300

"E" is for Expert



Whether it's the ABC's or the more complicated angles of Workmen's Compensation insurance you're interested in —

He knows the answers!

For 25 years Bituminous Casualty special agents, auditors, engineers and adjusters have taken pride in their ability to give you and your policyholders a service that pleases.

Bituminous Casualty is the ONE stock company that REALLY WANTS to underwrite your workmen's compensation risks.

Established in 1917 and assets exceed \$9,000,000.00.

It pays to know the Bituminous!

BITUMINOUS CASUALTY CORPORATION
ROCK ISLAND ILLINOIS

ous phenomenon has any practical application is not clear, but evidently waterproofed limestone is better than ordinary limestone in mixtures having small quantities of common salt.

Quantity of Dust Below a Certain Minimum Size Means Little—Testing dusts to see what percentage of them passes through a 240-mesh B.S. sieve gives little indication of the dispersibility of a dust. Two dusts which pass in an equal percentage through such a sieve may have wide differences in dispersibility. However, the quantity of fine dust in a mixture may be determined by sedimentation or by direct measurement under the microscope, and now a new idea has been evolved: measurement by the velocity with which air under a certain pressure will pass through a column of the dust. A cloud of dust with 0.01 oz. per cubic foot would obscure a 3½-c.p. miner's lamp at a distance of 6 ft. and at a distance of 60 ft. if the cloud contained 0.001 oz. per cubic foot.

Experiments made in sampling dust deposits along mine roadways with equipment somewhat similar to a household vacuum cleaner proved the innovation to be not "fully satisfactory."

Volumeter Gives Good Results—Tests have determined that, in the laboratory with hand-made mixtures, tests in triplicate of mine dusts checked within 1 percent of incombustible material when account was taken of combined water in the shale (about 2 percent). Because in the prescribed analytical method, this combined water (which suppresses combustion rather than aids it) is reckoned incorrectly as combustible material, estimations with the volumeter are more accurate than chemical analysis.

If the mine is not rock-dusted with gypsum, which has a density much lower than natural mine shale, much error may arise if the test apparatus is calibrated with gypsum, so it should be calibrated with a mixed shale dust consisting mainly of mine shale to avoid overestimating the incombustible content. The possible overestimate should then not exceed 2 or 3 percent. The volumeter method has been recommended by the S.M.R.B. to the Mines Division as an alternative to the chemical analysis of mine dusts.

Cannot Rely on Color of Dust

Gross Measurement and Color Indications Not so Good—Bulk-density measurements may have an average error of 8 percent when limestone is present and 5 percent when roads are rock-dusted with gypsum or shale. Fineness and moisture variations spoil this means of determining combustible percentages, and it is suitable only for determining whether road dusts are well within the range of safety.

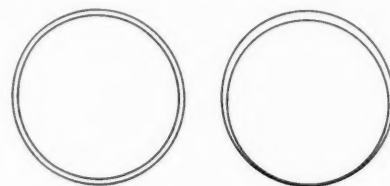
Calorimetric methods at two colliery laboratories have been found to agree within 2 percent on an average, but such a result is better than can be expected if the method is applied to mine-road dusts indiscriminately, for the grayness of a mixture depends not only on its chemical composition but also on the fineness of its constituents. Also, the method is not accurate when made on comparatively light-colored dusts, and it is notable that most of the road-dust tests in the two laboratories contained more than 80 percent of incombustible matter and about half contained over 90 percent.

When Chemical Analyses Fail—Prescribed

methods for analyzing mine dusts are not fully satisfactory when the dusts contain gypsum or shales of high combined-water content. A new method is to determine the free moisture in the sample by heating at 60 deg. C. in a vacuum and the sum of the free and chemically combined water by heating at 240 deg. C., also preferably in a vacuum. Analysis of mine dusts containing shales is complicated by the presence in the shale of chemically combined water which is driven off only by heating to 500 deg. C. or over. In the usual gravimetric method, this combined water is expelled when the combustible matter is burned and is unfairly included, therefore, as combustible matter. The error thus arising is of importance when fireclays containing up to 15 percent of combined water are used for rock-dusting.

Hazard of Aluminum-Painted Ironwork—It has been discovered that rusty ironwork that has been coated with aluminum paint will give dangerous flashes when struck by a metallic object. But, for this to occur, the aluminum at some time must have been heated to at least 130 deg. C. The flashes which will ignite firedamp, coal gas and a number of other gases result from a thermit reaction between the iron and aluminum. [Such a danger might exist in mines during or after an explosion or mine fire.] "It is unlikely," says the report, "that the heat treatment would ever be given to any metal work for use underground, and so there is little likelihood of aluminum-painted pit props or rings being in a dangerous state, but the possibilities should not be overlooked." [Seeing that rings are sometimes heated in straightening and then replaced in the roadway, the risk is quite conceivable.]

Beware of Eccentricity in Shafts of Flame-proof Equipment—"Experiments with shafts of 1½-in. and 3½-in. diameter showed that the maximum 'safe' diametral clearance when either shaft was concentric with its gland was about twice the maximum safe diametral clearance when the shaft was fully eccentric



How eccentricity lets flame escape.

to its gland; that is a gap which is just safe, for the concentric position becomes unsafe if the shaft is fully displaced, and to recover the safe condition the gap would have to be halved." [The report says nothing about wear as a source of such eccentricity. With a shaft, the oil may take care of that perhaps.]

It says, however: "Some electric motors, especially those in which the armature is built on a 'spider' and those which have longitudinal holes in the armature assembly, are in effect two spaces linked by narrow passages." When gas ignites in one of these spaces, the explosion travels into the second space, but this 'pressure piling,' as it is termed, did not seem to have any effect on the gaps of the particular motor tested.

Firedamp Explosions Make Strains of a Static Order—Strains due to an explosion

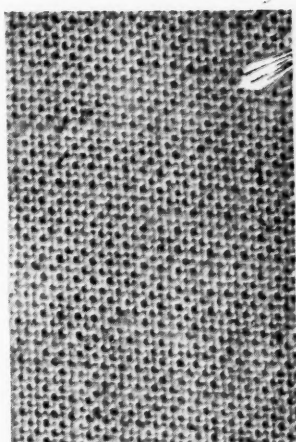


COTTON BRATTICE CLOTH

TRADE MARK REG. 1940

ESSENTIAL FOR—

1. Efficient Ventilation
2. Safety
3. Lower Ventilation Costs



TRY THE FAMOUS
"BLOW-TORCH" TEST

100%
**AMERICAN
MADE**



Only MOROPA combines these four qualities
in one SUPERIOR cloth:—

*RESISTS MILDEW
FLAME-PROOFED
LOW POROSITY
MAXIMUM WEAR*

MOROPA is made in one standard grade.
Stock widths are 36, 48, 60, 72 and 84 inches.
Rolls are 50 or 100 lineal yards. Shipment is
direct to your mine, f.o.b., Mars, Pa.

You will find an actual sample, as well as full
information about MOROPA on page 111 of
the 1941 Coal Mining Catalog (a McGraw-
Hill Publication).

Manufactured by

JOHN FLOCKER & COMPANY

642 GRANT ST.

Est. 1822

PITTSBURGH, PA.



pressure must be related to rate of rise in pressure and to the natural frequency of vibration of the inclosure and its parts. Distortions on large commercial containers were measured, and it was found that methane-air explosions produced a maximum strain equal to that created when an equal pneumatic or hydraulic pressure (this is a static pressure) was slowly applied. However, the explosions may not always result from methane-air in the inclosures, for gas from distilled varnishes or azides may also be present.]

Sheathed Explosives Safer but Still Not Harmproof—Though experiments have proved that explosives if sheathed have a greater margin of safety if fired in the presence of firedamp, it has been found that a charge may be more dangerous if part confined and part exposed. A 3-oz. sheathed explosive in a short shothole with the outer end of the cartridge flush with the mouth did not ignite firedamp when exploded; it did so, however, when suspended in firedamp, but a 2-oz. cartridge did not. Nevertheless when a 2-oz. cartridge was fired in a shothole with half of the cartridge projecting from the hole, the firedamp was ignited. [Perhaps, where the cartridge is not cooled by the sheath, and especially where there is no perimetral resistance, burning occurs and a flame emerges. In actual operation, such flame may emerge at the ends of the cartridges (which are not sheathed) and a crevice in the coal at that point or near it, with the cartridge not tight in the hole, may furnish the opportunity for emergence of the flame into the undercut. High temperature perhaps is a desirable characteristic in an explosive, preventing slow combustion and a lengthened flame.]

Violence Ignites Firedamp

Firedamp Can Be Ignited by a Shock Wave—Tests show that even at room temperature an explosive firedamp-and-air mixture can be ignited by the shock wave which develops when a severe pressure mechanically applied bursts a copper diaphragm. But the gas thus put under pressure must be an explosive mixture of firedamp and oxygen. The same result can be obtained when the mixture behind the diaphragm is of firedamp and air, but in that case the explosion will occur only if the firedamp-and-air mixture, in front of it and exposed to the shock wave, has been warmed before the diaphragm bursts.

Concrete-Filled Steel Props—Tests were made to determine the strength of props constructed of $\frac{1}{8}$ -in. mild steel tubes lap-welded and filled with concrete made dense before setting either by vibration or a spinning of the tubes. Props of $4\frac{1}{2}$ -in. diameter and $4\frac{1}{2}$ ft. long carried maximum loads of about 60 to 70 tons. No difference was found in the strength of vibrated and revolved concrete props; the latter had a cavity about 1 in. in diameter through the center as a result of the whirling.

These props can be subjected to loads sufficient to cause buckling and then can be restraightened before failing, not once but five or six times. This failure occurred at the mid-length where one of the bulges will progressively develop until the tube cracks across. The props are likely to be damaged at the ends when loaded unevenly and when

being set. To avoid this, the best results are obtained by welding steel bands and cover plates to the ends, and by infolding the ends

of the tube. Tubes, when solidly filled, are better able to withstand repeated loading, setting and restraightening.

Full-Mechanical Mine Captures Safety Award Of Big Sandy-Elkhorn Institute

HOW the accident record of a full mechanical mine can stack up with the records of mines which are all or part on hand loading and in the same general territory was answered at Pikeville, Ky., Feb. 27, when at the annual meeting and dinner of the Big Sandy-Elkhorn Coal Mining Institute a plaque was awarded to Seco mine of the South-East Coal Co. for the best accident record among the Class A (larger) mines. Using Goodman shaker conveyors all but two equipped with duckbills, the mine in 1941 produced 391,795 tons, with only 16 injuries, 224 days lost, a frequency rate of 43.7 and a severity of 0.61.

Alan J. Smith, of Cincinnati, president, was there to receive the award from F. M. Correll, safety inspector, Consolidation Coal Co., Jenkins, and retiring president of the institute. Harry La Viers, vice president in charge of operations of the South-East company and president of the Big Sandy-Elkhorn Coal Operators' Association, in his response said the mine spent $2\frac{1}{2}$ times more for accident prevention than the cost of accidents.

Institute Officers

President—J. T. Parker, superintendent, Inland Steel Co., Wheelwright.

Vice presidents—Herbert Wheeler, superintendent, North-East Coal Co., Auxier; J. E. Green, superintendent, Utilities Elkhorn Mining Co., Martin; M. K. Reed, superintendent, Liberty Elkhorn Mining Co., Langley, Ky. . . .

Secretary-Treasurer—A. D. Sisk, director, Big Sandy-Elkhorn Coal Operators' Association, Pikeville.

Directors—G. C. Sutherland, safety engineer, Inland Steel Co., Wheelwright; W. R. Campbell, general foreman, Koppers Coal Division, Eastern Gas & Fuel Associates, Weeksbury; M. M. McCormick, general foreman, Consolidation Coal Co., Van Lear; F. M. Correll, safety inspector, Consolidation Coal Co., Jenkins; V. D. Picklesimer, superintendent, South-East Coal Co., Seco; Edgar Dale, superintendent, Elk Horn Coal Corporation, Mines 3 and 4, Fleming; Fred Sherman, superintendent, North-East Coal Co., Thealka; R. C. Denny, superintendent, Consolidation Coal Co., Jenkins; James H. Claggett, preparation engineer, Utilities Elkhorn Coal Co., Pikeville; W. E. Hess, superintendent, Princess Elkhorn Coal Co., David; Mart V. Bailey, superintendent, Goose Creek Mining Co., Garrett; E. H. Quick, safety director, Elk Horn Coal Corporation, Wayland; A. H. Mandt, general manager, Stephens Elkhorn Fuel Corporation, Manton; J. A. McKay, office manager, Clear Branch Mining Co., Pikeville.

With a fully mechanized mine, machinery must be kept going and it is not practicable "to have men around to take the places of men hurt." He stressed the present war effort need for elimination of accidents and offered an amended slogan for coal mine workers, "Work safely; your country needs you and your company needs you."

In the Class B (smaller) mines competition, the award went to Mine No. 2 of the Elk Horn Coal Corporation. Mr. Correll called on I. S. Ramsey, superintendent, to receive that plaque. The outstanding frequency record for the 33 mines of the field went to No. 4 mine of the Elk Horn Coal Corporation, and Edgar Dale, superintendent, was called to the speakers' table to claim the plaque. The frequency rate at this mine, producing 205,599 tons, was 7.33, a figure less than half that of the nearest competitor.

Bronze, silver and gold lapel buttons for supervisions without lost-time accidents for one year, two years and five years were awarded. A gold button was given to G. A. Hixon, of the South-East company; silver buttons to John M. Gunning and Morgan Johnson, Elk Horn Coal Corporation, and to Polk Campbell, Weeksbury mine of Koppers Coal Division of the Eastern Gas & Fuel Associates.

Of the eleven bronze buttons, nine went to foremen of the South-East company, as follows: Jasper Taylor, Roy Hill, R. D. Prater, John Basham, D. W. Quillen, Jake King, Hobert Stambaugh, L. D. Gish and W. R. Preston Jr. Other silver buttons went to W. D. Conry and E. H. Smith, of the Elk Horn Coal Corporation.

J. T. Parker, superintendent, Inland Steel Co., Wheelwright, was elected president to succeed Mr. Correll. The following men were introduced at the dinner and their speeches, if any, were very short: G. M. Patterson, chief of Kentucky Department of Mines and Minerals; L. W. Huber, district manager, Mine Safety Appliances Co.; Kenneth C. Lee and Joe Firth, federal mine inspectors headquartered at Pikeville; K. L. Arnold, chairman, rationing board of Pike County; J. H. Edwards, associate editor, *Coal Age*, and three past presidents of the institute, namely, W. R. Campbell, general foreman, Weeksbury mine of Koppers; G. C. Sutherland, safety engineer, Inland Steel Co., Wheelwright, and A. B. Brook, coal inspector, Elk Horn Coal Sales Co., Wayland.

Walter Hornsby, district inspector, Kentucky Department of Mines and Minerals, presented and discussed in detail the January accident report for the 33 mines of the district.

Rail & River Mechanizes

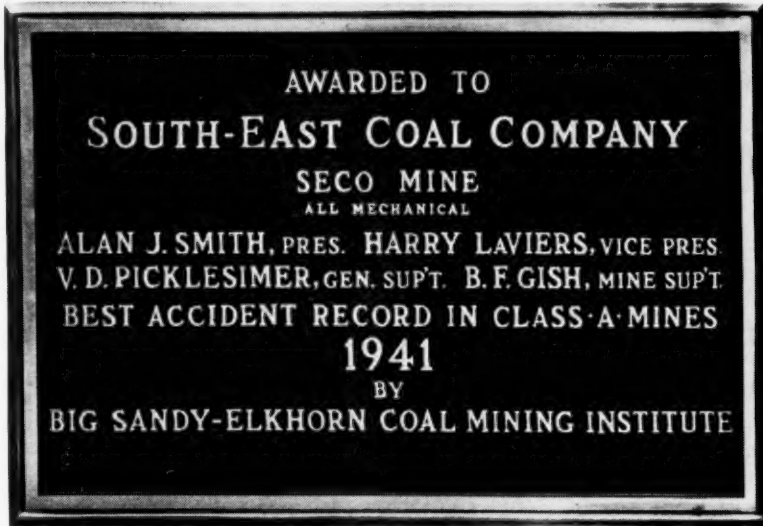
Mechanization of No. 4 mine of the Rail & River Coal Co., Stewarts, Ohio, has been completed at a cost of over \$200,000. The equipment has been in operation for several weeks with good results.



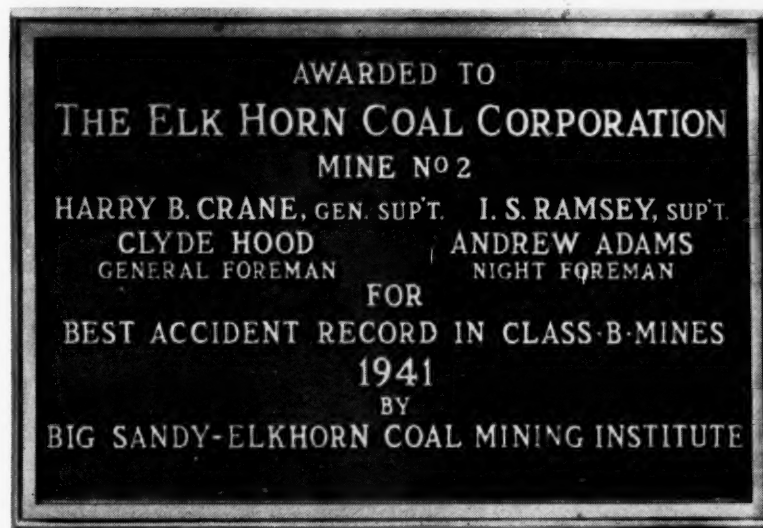
A. D. Sisk, F. M. Correll, J. T. Parker, Herbert Wheeler, J. E. Green and M. K. Reed. And why? Secretary - treasurer, retiring president, president-elect and three vice presidents.



Harry LaViers, vice president of the South-East Coal Company and president of the operators' association.



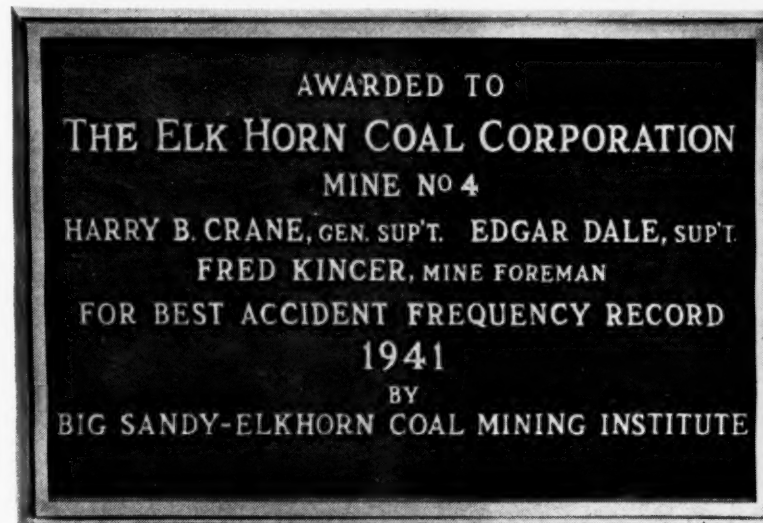
I. S. Ramsey (right), of Elk Horn Coal, accepts plaque for Mine No. 2.



Alan J. Smith (right), president, South-East Coal Co., receives award for the full-mechanical mine.



J. T. Parker (right) accepts the responsibility from F. M. Correll.



These men were awarded buttons for accident-free supervision.

COAL MEN ON THE JOB



G. E. Moore, vice president and general manager, Moore Coal Co., Tennessee.



J. E. Bowman, vice pres. and gen. mgr., Utilities Elkhorn Coal Co., Pikeville, Ky.



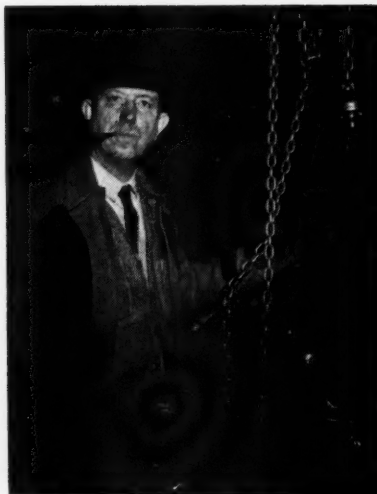
R. A. Hedland, gen. supt., Utilities Elkhorn Coal Co., Pikeville, Ky.



William O'Bryant, mine foreman, No. 7 mine, Hart Coal Corporation, Mortons Gap, Ky.



N. H. Hale, chief electrician, Tierney Mining Co., Stone, Ky.



O. J. Williams, electrical and mechanical engineer, Utilities Elkhorn Coal Co., Pikeville, Ky.



William Vinson, general superintendent, Hart Coal Corporation, Mortons Gap, Ky.



E. A. Rickard, master mechanic, Weeksby, Ky., Koppers Division, Eastern Gas & Fuel Associates.



Jas. H. Clagett, prep. engineer, Utilities Elkhorn Coal Co., Pikeville, Ky.



W. M. Picklesimer, mining engineer, Utilities Elkhorn Coal Co., Pikeville, Ky.



Geo. Blalock, entry boss, No. 7 mine, Hart Coal Corp., Mortons Gap, Ky.

L. B. Jesse, mine engineer, Weeksby, Ky., Koppers Coal Division, Eastern Gas & Fuel Associates.



J. E. Green, superintendent, Martin No. 8H mine, Utilities Elkhorn Coal Co., Martin, Ky.

Eastern Coal Sales Co. Formed By Tierney Interests

Eastern Coal Sales Co., incorporated under the laws of West Virginia, with authorized capital of \$500,000, is to start operations on April 1 with general headquarters in Bluefield, W. Va., according to Lewis C. Tierney, president of the company. The sales agency will handle about 1,500,000 tons of southern West Virginia and eastern Kentucky low- and high-volatile coals. An affiliate of the company, the Eastern Coal Corporation, mines, prepares and ships about 1,500,000 tons annually for the Ford Motor Co.

Mrs. Laurence E. Tierney, Jr., is secretary-treasurer of the sales company; the board of directors includes the officers together with L. C. Skeen, vice president in charge of operations, Eastern Coal Corporation, and George B. Baker, vice president in charge of operations, Tierney Mining Co., Premier Pocahontas Collieries Co. and Laurence E. Tierney Land Co.

Central Appalachian A.I.M.E. Plans Annual Meeting

At a dinner of the Central Appalachian Section of the American Institute of Mining and Metallurgical Engineers held March 20 at the Daniel Boone Hotel, Charleston, W. Va., arrangements were discussed and suggestions received for the annual meeting, scheduled for late in August at the Greenbrier Hotel, White Sulphur Springs. R. H. Morris, general manager, Gauley Mountain Coal Co., is chairman of the section. The committee on arrangements consists of Carl Scholz, George Keller, Carel Robinson and Veleair C. Smith.

New Preparation Facilities

AMES MINING CO., Elmo, W. Va.—Contract closed with Kanawha Mfg. Co. for Kanawha Belknap coal washer to clean nut coal at rate of 30 tons per hour.

BLUE DIAMOND COAL CO., Blue Diamond, Ky.—Contract closed with McNally-Pittsburg Mfg. Corporation for two 72-in. Type A McNally-Norton vertical pick breakers to reduce lump coal to large egg and nut sizes; combined capacity, 400 tons per hour; to be delivered in April, 1942.

EVANS COAL CO., Beaver Meadows, Pa.—Contract closed with Deister Concentrator Co. for two SuperDuty Diagonal-Deck No. 7 washing tables for No. 4 buckwheat anthracite.

INDIAN HEAD COAL CO., Tremont, Pa.—Contract closed with Menzies Separator Co. for one 8-ft. Menzies cone to clean egg and stove; feed capacity, 70 tons per hour.

LEHIGH RIVER STEAM COAL CO., Walnutport, Pa.—Contract closed with Deister Concentrator Co. for one SuperDuty Diagonal-Deck No. 7 washing table to handle barley size anthracite.

LILLYBROOK COAL CO.—Contracts closed with Kanawha Mfg. Co. for Kanawha Belknap washer to clean stove and nut coal at rate of 60 tons per hour at mine at Big

WEST VIRGINIA TRACK EQUIPMENT IS GOOD..



STEEL SWITCH TIES

Steel switch ties of the integral type are a very important item in planning efficient and economical trackwork. Their ultimate cost is low and they make a great saving in switch laying labor. In the West Virginia type illustrated above, there are no loose parts, and only a hammer is needed to install a set of ties. After the rotary braces are hammered into closed position, the stock rails are securely clamped on the inside on every tie and clamped and braced on every tie on the outside of the rail. The closure rails are clamped on both sides of the rail on the heel tie where as illustrated, both clamp the rails in position and act as a brace to prevent their overturning under any conditions of traffic. By extending the first two ties, it is easy to apply any type of switch stand desired. The ties may be made of low type tie section as illustrated for light or medium work, or of heavier type trough section for heavy traffic conditions. Many mines have shown remarkable savings in track laying costs by the use of these ties, as they are quickly laid or removed and the labor of taking up bottom or the blocking up of track that is necessary when steel ties and wood switch ties are used, is eliminated. They may be used over in many places with no danger of the spike killing which destroys wood ties. Consequently, the ultimate cost is low.

*... and correct installation
makes it even better!*

Modern mining demands the best materials, workmanship and design in track work. West Virginia builds high grade, modern track work and their Engineers are glad to give you obligation free consultation service.

Everything in Trackwork

THE WEST VIRGINIA RAIL CO.
HUNTINGTON  WEST VIRGINIA

SuperDuty DIAGONAL DECK

**No. 7
COAL WASHING
TABLE**



**Offers Higher
Capacity and makes a Lower
Ash Coal**

Improved "fanning out" action of the Diagonal Deck—the new record making Concenco Anti-Friction Head Motion—smooth and easy running—account for unsurpassed cleaning at surprisingly higher capacities.

Write for Bulletin No. 119

THE DEISTER CONCENTRATOR COMPANY

The Original Deister Co., Incorporated 1906

909 Glasgow Ave.

Ft. Wayne, Ind., U. S. A.



Osmose-treated Oak ties installed by a prominent mining company* on outside track.

Osmose-treated ties cut replacement costs and help prevent accidents

Because untreated ties previously decayed within a few years, thereby necessitating frequent costly replacements, a prominent Southern mining company* investigated and installed Osmose-treated ties. Careful records proved that the Osmose-treated ties lasted 3 to 5 times longer than the untreated ties thus cutting replacements and costs by as much as 300 to 500%. Rail spreading with resultant accidents was also minimized because of sounder wood structure around the rail spikes. Today, this company, as well as many other mining companies, uses Osmose-treated ties and timbers exclusively. Our field engineers will gladly assist you in solving your wood-preserving problems. Write for Bulletin 142-C, today.

*Name on request.

OSMOSE WOOD PRESERVING COMPANY OF AMERICA INCORPORATED

General Offices: Buffalo, N. Y.—Branch Offices: Birmingham, Ala.; Denver, Colo.; Harlan, Ky.; Kenova, W. Va.

Why

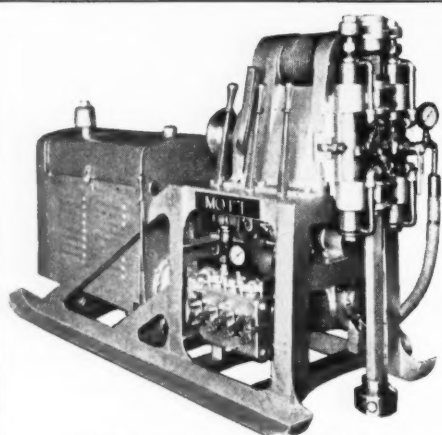
OSMOSE PROTECTION PAYS

1. APPLICABLE to fresh cut native timber locally obtained and treated thus eliminating or reducing transportation costs to minimum.

2. PENETRATES deeply into the timber providing 3 to 5 times longer service life over untreated wood.

3. ECONOMICAL. No capital investment in treating equipment required. Eliminates costly transportation to and from mechanical pressure-treating plants.

4. EASY TO APPLY by brushing or dipping with unskilled labor. No special expensive equipment necessary.



1500' - 2 1/4" Core — Oil Hydraulic

DIAMOND CORE DRILLING CONTRACTORS

Specializing in Testing Coal Properties.
We Guarantee Satisfactory and
"PROPER COAL CORES"

Inside Mine Drilling
Pre-Grouting for Mine Shafts
Wells and Discharge Holes
Drilled and Grouted.

MOTT CORE DRILLING CO.
Huntington, W. Va.

Stick, W. Va.; for dump shield, rock feeder and supports at No. 3 mine, Lillybrook, W. Va.; and for fine-coal screening and assembling equipment, including two 5x14-ft. Symons screens, mixing and rescreen conveyors and miscellaneous equipment, with capacity of 200 tons per hour, for mine at Affinity, W. Va.

MANBECK COAL CO., Tamaqua, Pa.—Contract closed with Deister Concentrator Co. for six No. 7 SuperDuty Diagonal-Deck washing tables to handle No. 4 buckwheat anthracite.

NECHO COAL CO., Donaldson, Pa.—Contract closed with Deister Concentrator Co. for one No. 7 SuperDuty Diagonal-Deck washing table to handle flat nut coal.

No. 9 COAL CO., Pittston, Pa.—Contract closed with Finch Mfg. Co. for one 4-ft. Menzies cone to clean No. 5 buckwheat coal; feed capacity, 22 tons per hour.

SLOSS-SHEFFIELD STEEL & IRON CO., Bessie Mine, Alabama—Contract closed with McNally-Pittsburg Mfg. Corporation for one McNally-Norton automatic washer to clean 200 tons per hour of 0x1 1/8-in. coal; to be delivered about July 1.

Anthracite Institute Uses Radio To Speed Sales and Aid Nation

"The Pennsylvania anthracite industry is 'all out' in its effort to cooperate with the federal government in assuring an adequate coal supply in the territory in which anthracite is normally distributed. Anthracite production can be stepped up substantially above the accelerated ratio attained last year," stated Louis C. Madeira 3d, executive director, Anthracite Institute, at the "United for Victory" convention held in New York, March 19, in the Hotel Astor. The convention represents the Coal Merchants Association of Manhattan and the Bronx, the Fuel Merchants Association of Brooklyn and Queens, the Anthracite Club of New York City, the Anthracite Club of Brooklyn and Long Island and the New York State Retail Solid Fuel Merchants' Association.

To cooperate with the government in getting consumers to fill bins early and keep them filled, thus releasing transportation facilities for handling the ever increasing war-materials load, the Anthracite Institute has prepared eight one-minute radio transcriptions for retail anthracite dealers or their local and State trade association groups, and suggests that dealers together purchase radio time on stations most effective for their purpose. These transcriptions, Mr. Madeira presented at the meeting.

In a typical transcription from this series the announcer begins by stating, "Clear the tracks for victory," which is followed by the sound of a railroad train rushing by. Says the narrator, "Harold L. Ickes, Solid Fuels Coordinator, asserts: 'Coal in your bin in times like these is the best possible protection against shortage. This will help the war program and *not* be detrimental hoarding.' So fill your bins now with anthracite—Pennsylvania hard coal—of which there is an abundant supply. By filling your bins now, you free men and transportation facilities vital to our war effort!" The earlier sound

effect is then repeated until the train fades out in the distance.

Hobart L. Littell, of the institute staff, referred to a meeting of anthracite industry engineers held March 17 with leading heating boiler manufacturers. A plan arranged by Anthracite Industries Laboratory and anthracite producers has resulted in the development and production of grates suited to the conversion to anthracite, as occasion arises, of a high percentage of the oil burners in the New England and Middle Atlantic States. For this purpose boiler manufacturers have already largely increased reserve supplies of grates and other replacement parts.

T.C.I. to Add 73 Byproduct Ovens And New Mine

Seventy-three additional byproduct ovens and other auxiliary equipment are to be constructed by the Tennessee Coal & Iron & Railroad Co. at its Fairfield (Ala.) plant and a new mine tapping the Pratt seam is to be opened in the Short Creek section of the Warrior field, according to an announcement by Robert Gregg, president. The company recently placed in operation at Fairfield a large unit of byproduct ovens, but increasing requirements have necessitated further expansion.

Contract for design and erection of 73 Koppers-Becker ovens has been awarded to the Koppers Co., Engineering and Construction Division. It includes auxiliary equipment to process the gas from the ovens. This order will raise the total of Koppers and Koppers-Becker ovens at Fairfield to 509.

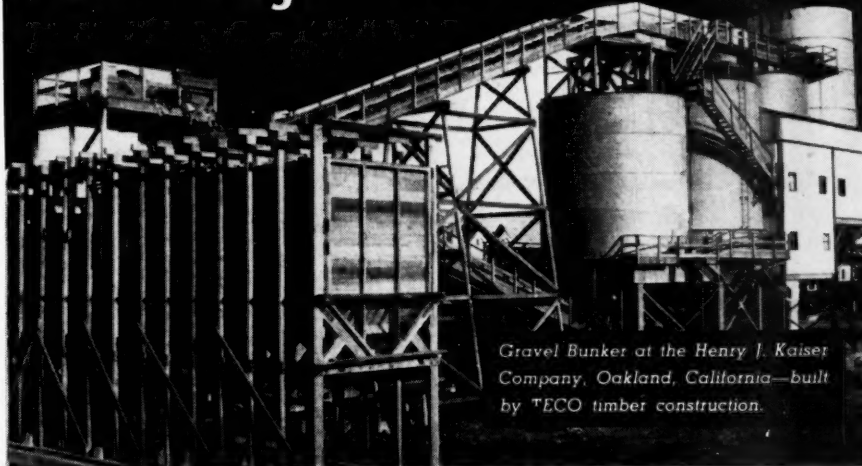
Upper Monongahela Association Organizes Coal Bureau

Organization of the coal bureau of the Upper Monongahela Valley Association was completed at Fairmont, W. Va., when operators representing 80 percent of the Pittsburgh seam producers of the upper ten counties of the Monongahela Valley signed contracts. The bureau, which will promote the sale of the region's coal, will be managed by a committee consisting of Earl C. Payne, Consolidation Coal Co.; Frank R. Amos, Christopher Coal Co.; Joseph Pursglove Jr., Pursglove Coal Co., and Daniel T. Buckley, Koppers Coal Division, Eastern Gas & Fuel Associates, representing the coal companies.

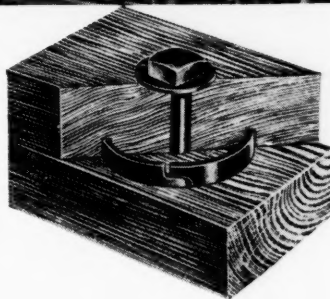
At the organization meeting of the committee representing the operators, A. C. Spurr, president of the Monongahela System, was named the fifth member, in accordance with the bylaws provision that there must be one member not connected with the coal industry. Mr. Spurr also was elected chairman of the management committee. John H. Jones, manager of the ten-county association, was named as temporary secretary and arrangements were made to hold meetings monthly.

The Upper Monongahela Valley Association, of which the coal bureau is a part, also is engaged in promoting and advancing the agricultural, general industrial and recreational resources of the ten counties. The coal bureau plans, through an engineering ad-

TIMBER Was Chosen For This Tough Task!



Gravel Bunker at the Henry J. Kaiser Company, Oakland, California—built by TECO timber construction.



THE TECO RING CONNECTOR spreads the load on a timber joint over practically the entire cross-section of the wood . . . brings the full structural strength of lumber into play.

Where Toughness Counts . . . Count on Timber!

Few raw materials, by bulk, are heavier and rougher than gravel.

Gravel bunkers must take constant pounding, grinding and thumping and support a pressure that only the toughest construction could stand.

The TECO System of timber construction builds bunkers that can "take it". TECO Connectors bring the whole toughness of timber into play by strengthening the joints to stand greater stresses.

Send the coupon for detailed information as to how TECO Connectors can help in your construction problems!

TIMBER ENGINEERING COMPANY, INC.

1337 Connecticut Avenue • Washington, D. C.

Tear Out MAIL TODAY!

TIMBER ENGINEERING COMPANY, Inc., Dept. BP-4.
1337 Connecticut Avenue, Washington, D. C.

Please send us complete information on the TECO Connector System of timber construction.

Individual _____
Firm _____
Street _____
City _____ State _____

visory service to consumers and prospective users of bituminous coal and also to consulting engineers, designers and manufacturers of combustion equipment, to bring about a general understanding of the economic utilization possibilities of the ten-county field.

Selection of Julian E. Tobey, vice president of Appalachian Coals, Inc., as managing director was announced on March 18. His headquarters will be in Fairmont after April 15, when his resignation from Appalachian Coals becomes effective.

Stokers Promise to Invade Natural Gas Territory

An exposition of coal-burning equipment held April 1-4 at Radio Center, Huntington, W. Va., attracted wide attention. Practically all of the homes in this city of 90,000 inhabitants and adjoining communities are heated with natural gas. New government plants under construction in the vicinity have created a housing shortage which demands an extensive building program that, properly utilized, will show the public the availability of modern coal-burning facilities. Local realtors estimate 500 new housing units will be required.

Harry A. Zeller, vice-president, West Virginia Rail Co., is chairman of the mines and mining committee of the Chamber of Commerce, which, jointly with the board of realtors, sponsored the exposition. Theobald A. Day, special representative of the Island Creek Coal Sales Co., cooperated in the arrangements. Among the exhibitors were: Myers Bridges Co., Louisville; Self-Stoking Stove & Foundry Co., Chicago; Battelle Memorial Institute, Bituminous Coal Research, Inc.; Appalachian Coals, Inc.; Iron Fireman Corporation, Cleveland; Moore Corporation, Joliet, Ill.; Williamson Heater Co., Cincinnati; Locke Stove Co., Kansas City; Rybolt Heater Co., Ashland, Ohio; Spiglitz Furnace & Foundry Co., Louisville; Allen Mfg. Co., Nashville, Tenn.; Island Creek Coal Sales Co.; American Radiator & Standard Sanitary Corporation, New York; Chesapeake & Ohio Ry.; and ten Huntington dealers and distributors of coal-burning equipment.

Solid Fuels Industry Committee Personnel Completed

Completion of the personnel of the recently formed Industry Committee on Solid Fuels (*Coal Age*, March, p. 75) was announced on Feb. 28 by Solid Fuels Coordinator Harold L. Ickes with the appointment of two members to represent the public interest. The new appointees are Walter Dill Scott, president emeritus of Northwestern University, Evanston, Ill., and Louis Jefferson Brann, former governor of Maine. Those previously named represent the coal industry, transportation and mine labor.

The committee, whose function is to advise on matters pertaining to coordination of the nation's fuel supply to meet war-time needs, has been formed to assist in carrying out President Roosevelt's request that the Secretary of the Interior take steps to assure that an adequate supply of solid fuels

will be available throughout the country where and when needed. Mr. Ickes said the committee would hold its first meeting in the near future.

With Ex-Governor Brann as chairman, the committee held its first meeting on March 10 in Washington. The group, which is to be known officially as the Solid Fuels Advisory War Council, chose as its secretary B. B. Brown, assistant to T. J. Thomas, formerly president of the Valier Coal Co. and now temporarily assisting Acting Solids Fuels Coordinator Gray. Particular attention was given to the need that all classes of coal consumers start to build up stocks immediately. Other problems considered were the effect of the draft on labor supply, operation of the priorities system on materials and supplies, and the early movement of lake coal.

Safety Minded Coal Loaders Win Photographs

Safe working coal-loading crews of the Bell & Zoller Coal & Mining Co., operating in Franklin County, Illinois, are rewarded by John Lyons, safety engineer of the company, with a crew photograph to each member. Pictures herewith show the winning crews for 1941 in mines Nos 1 and 2, at Zeigler, which are fully mechanized.

Joy No. 1 crew of Mine No. 1 made a record for 1941 of 21,315 man-hours without a lost-time accident. The crew foreman is Mike Sciranko and the mine foreman is John McGreavy. Joy No. 4 crew of Mine No. 2 set a record last year of 21,931 man-hours without a lost-time accident. The crew foreman is Ed. Grzelak and the mine foreman is William Guinney.



Joy crew No. 4, Mine No. 2. Left to right, front: Harry Owsley, Harold Bean, Kenneth Russell, L. A. Brown; center: Henry Grizzell, Robert Soda, John Lutostanski, Charles Driemeyer, Earl Swalls, George Bailor, Ben Arnold; rear: Ed. Grzelak (foreman), G. E. McCullom, Taylor Green, Loren Ozment, L. Russell, Francis Baynor, C. O. Williams, James Carter.



Joy crew No. 1, Mine No. 1. Left to right, front: John Williams, John McFadden, Robert Armiger, Jr., Mike Sciranko (foreman); center: John Slattery, Walter Newcam, Louis Bonenburger, Dave Harvey, Fount Moore; rear: Orville Furlow, Dalton Owens, Embro Horath, Denzil Viernam, August Saille, Cliff Price.

CANTON AUTOMATICS REPLACE ABSENT MAN POWER!

... Do the work **QUICKER**—Do it more **SAFELY**—
Do it **BETTER** and at **LESS COST**!



AUTOMATIC SWITCH THROWERS AND SIGNALS

- Speed transportation safely by eliminating the stop to throw switch points, or telephone for right of way. Prevent collisions.
- Keep workmen off the haulage ways and reduce accidents.
- No need to slow down strips.
- On duty 24 hours a day.
- Savings on power and time will soon liquidate the original cost.
- Two minutes to stop and throw a switch is the time required for a trip, at 10 miles per hour, to travel 1800 ft.

SEND TODAY FOR BULLETIN CONTAINING DETAILS

THE AMERICAN MINE DOOR COMPANY

2057 DUEBER AVE.

CANTON, OHIO

Jeffrey entry gathering conveyor driven through a DE LAVAL Worm Gear

FOR HEAVY DUTY DRIVES specify DE LAVAL WORM GEARS

The high efficiency and reliability of De Laval worm gears is especially valuable in continuous, 24-hour service. The efficiency approaches 97 per cent at some ratios and increases, rather than recedes, with use. Power is transmitted without vibration, chatter or shock. The only maintenance required is occasional inspection of the oil level in the casing.

The driven shaft can be extended to either right or left, or both, or either up or down, or both.

Ask for Booklet W-1130 on "Industrial Applications of Worm Gears"

DE LAVAL WORM GEAR DIVISION

of the De Laval Steam Turbine Co., Trenton, N. J.

MANUFACTURERS OF TURBINES STEAM HYDRAULIC PUMPS CENTRIFUGAL PROPPELLERS
ROTARY DISPLACEMENT MOTORS MOUNTED MIXED FLOW CLOSURE SELF PRIMING
CENTRIFUGAL BLOWERS and COMPRESSORS GEARS WORM HELICAL and FLEXIBLE COUPLINGS

Personal Notes

O. L. ALEXANDER, president, Pocahontas Fuel Co., operating in West Virginia and Virginia and with offices in New York City, has been elected a director of the Irving Trust Co., New York City.

LESLIE BALDWIN is now employed as section foreman at the Rossmore mine of the West Virginia Coal & Coke Corporation, Rossmore, W. Va.

LAWSON W. CORDER has been appointed section foreman for the Mountain Fuel Co., Flemington, W. Va.

C. O. CARMAN, recently mine foreman at Powellton No. 4 mine of the Koppers Coal Co., Kimberly, W. Va., has been transferred to the company's Carswell mine, Kimball, W. Va., as assistant general mine foreman.

A. W. COOK, Red Jacket Coal Corporation, Red Jacket, W. Va., has been promoted from general mine foreman of Junior mine to superintendent of No. 6 mine.

WILLIAM DERENGE, for the last 20 years employed by the Imperial Smokeless Coal Co., Quinwood, W. Va., has been named by the West Virginia Department of Mines as a mine inspector in the Greenbrier district.

JULIUS DOMICO has been made assistant mine foreman at No. 63 mine of the Consolidation Coal Co., Monongah, W. Va.

NICHOLAS EATES has been promoted to section foreman at No. 63 mine of the Consolidation Coal Co., Monongah, W. Va.

E. J. GEALY, senior priority specialist of the power branch of the Office of Production Management, now the War Production Board, has accepted a position as electrical engineer with the Columbia Steel Co. in connection with its Utah coal and coke extension program. He was for about ten years electrical engineer for the Pittsburgh Coal Co., previous to which he was associate editor of *Coal Age*.

R. B. GUNN has been advanced to chief electrician by the Simpson Creek Collieries Co. at Galloway, W. Va.

VERA HAMB, formerly general mine foreman for the Utilities Coal Co., Kistler, W. Va., has been appointed a State mine inspector by the West Virginia Department of Mines.

JOHN HOTSINPILLER has been made night tippie foreman by the Mountain Fuel Co., Flemington, W. Va.

H. B. HUSBAND, who became manager for the Consolidation Coal Co.'s Kentucky division, with headquarters at Jenkins, on Jan. 1, 1941, resigned on March 23, 1942. J. D. SNYDER, assistant under Mr. Husband, has been named to succeed him.

RAYMOND JUSTICE has been named section foreman by the Mallory Coal Co., Mallory, W. Va.

J. R. KIRBY, Red Jacket Coal Corporation, has been moved from the Keen Mountain mine, in Buchanan County, Virginia, where he was superintendent, to Red Jacket, W. Va., where, as assistant to the president, he is in charge of all operations.

FRANK LACARE has been made section foreman by the Simpson Creek Collieries Co., Galloway, W. Va.

EUGENE S. LIEVING has been made assistant mine foreman at No. 63 mine of the Consolidation Coal Co., Monongah, W. Va.

H. E. LYONS, general mine foreman for the Norton Coal Co., Norton, W. Va., has been elected president of the Bituminous Casualty Mine Compensation Insurance Co., with coal company officials, foremen, Bureau of Mines representatives and representatives of the insurance company in attendance at the election. Other officers named are: first vice president, CREED KELLY, Big Stone Gap; second vice president, GEORGE BRYSON, Norton; secretary-treasurer, E. F. FULLEN, Appalachia, W. Va.

JOSEPH MANKO has been named section foreman by the Guyan Eagle Coal Co., Amherstdale, W. Va.

D. L. McELROY, director, School of Mines, West Virginia University, has been granted an extended leave of absence to June 30 on a limited basis. He will continue to serve with the War Production Board at Washington, D. C., as technical adviser for mine priorities but will devote part time to the administration of the School of Mines.

HARRY M. MOSES, president, H. C. Frick Coke Co., has accepted appointment as chairman of the Coal Division of the American Mining Congress, vice R. L. IRELAND JR., president, Hanna Coal Co.

A. J. PUGH, formerly preparation manager, McAlpin Coal Co., McAlpin, W. Va., has been appointed superintendent of the Wyoming mine of the Red Jacket Coal Corporation, Wyoming, W. Va.

GEORGE A. SCHULTZ, who has been in charge of operations for the Liberty Fuel Co. at Latuda, Utah, for the last 25 years, has been transferred to Salt Lake City as general manager of the company.

WILLIAM E. STINETTE, Mount Hope, W. Va., has been appointed associate inspector with the inspection division of the U. S. Bureau of Mines.

H. J. VANPELT has been named assistant mine foreman at No. 63 mine of the Consolidation Coal Co., Monongah, W. Va.

L. METCALFE WALLING has been appointed by President Roosevelt as Administrator of the Wage and Hour Division. Holding an A.B. degree from Brown University and an LL.B. from Harvard Law School, Mr. Walling also has studied in France, was first head of the Rhode Island Department of Labor, 1935-7, and since then has been administrator of the Walsh-Healey act in the U. S. Department of Labor.

HURXTEL M. WHITE, associated with the Call Engineering Co., Logan, W. Va., for a number of years, has been appointed a State mine inspector by the West Virginia Department of Mines.

HOWARD WILLS has been made section foreman at No. 93 mine of the Consolidation Coal Co., Jordan, W. Va.

W. H. ZICKEFOOSE has been promoted from machine operator to section foreman in No. 93 mine of the Consolidation Coal Co., Jordan, W. Va.

Play Safe

USE

ABC

JUTE BRATTICE CLOTH....

RESISTS the effects of moisture

... WON'T SHRINK

therefore NO AIR LEAKAGE ...

● Plus this important feature ABC Jute Brattice Cloth gives you other advantages that are most important today as America produces for Victory.

ABC Jute Brattice Cloth resists fungi because of a compound which is formed by the chemicals used. A chemical treatment also is given this cloth so that it is flame resistant. Corrosive conditions are fully resisted because of a special treatment which also reduces air friction.

Be assured of well ventilated working places—specify ABC Jute Brattice Cloth. Our many years of experience are at your disposal.

AMERICAN BRATTICE CLOTH CORPORATION

WARSAW, INDIANA

Agencies in all Mining Centers



Four flat bearing surfaces give the Laughlin Safety Clip a four-square *Fist-Grip* on wire rope. No finger-pinching U-Bolt to bite and bend the strands, weakening them under high tension and whipping.

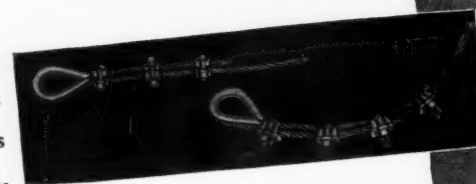
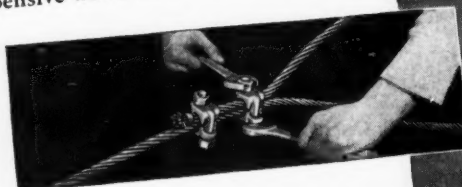
95% of Rope Strength delivered with the *Fist-Grip* Safety Clip is proved by competitive tests, three Safety Clips holding when the rope snaps under four U-Bolt Clips. Fewer clips mean savings in time and money. And experienced help can't put them on backwards — the saddles are identical.

25% STEEL SAVED FOR WAR NEEDS —

For an assembly of equal strength, Safety Clips use 25% less steel than a U-Bolt assembly. You are saving precious steel available for ships, tanks and guns when you use Safety Clips. Remember — they don't crimp and crush wire rope — no expensive waste from cut-off rope ends.

These Safety Savings Can Be Yours

- No rope crimping — rope saved
- Can't go on backward — accidents saved
- Bolts on opposite sides — tightening time saved
- No battered, bent threads — clips saved
- No special wrench — tools saved
- Fewer clips needed — clips saved
- Fewer rope breaks — accidents saved



Distributed Exclusively Through Mill Supply Houses
Look for Laughlin Products in Coal Mining Catalog

THE THOMAS LAUGHLIN COMPANY
PORTLAND, MAINE



Railroads Break With OPA On Freight Rates

Managements of Class 1 railroads broke off relations on March 14 with the Office of Price Administration because of the latter's action in filing with the Interstate Commerce Commission a petition for postponement of many of the general freight rate increases scheduled to take effect on March 18. The carriers looked upon OPA's action as a violation of an agreement made at the time the railroad unions obtained a \$300,000,000 annual increase in wages through White House intervention. The OPA filed its petition March 13 while its representatives were conferring with a committee of 21 railroad traffic officials in the Pennsylvania Hotel, New York City.

Freight rate increases estimated to produce about \$200,000,000 additional revenue for the roads on the basis of 1941 traffic were sanctioned by the I.C.C. on March 2. For anthracite and bituminous coal and coke the increase is 3c. per net ton when the old rate was \$1 or less and 5c. when it exceeded \$1. Gross ton rates are 1c. more in each case. Water carriers under I.C.C. rate jurisdiction were allowed corresponding increases in rates. The increases are to apply for the duration of the war and six months thereafter.

Commissioner Charles D. Mahaffie—joined by Commissioner Carroll Miller—asserted that it was a mistake to put a time limit on the increases, maintaining that the carriers should have been granted all they asked instead of the "relatively meager" advances permitted. The country would suffer much more from any failure of rail facilities, said Commissioner Mahaffie, than it would from a 10 percent increase in rates.

A general increase of 6 percent in freight rates within Pennsylvania, with minor exceptions, was granted on March 12 by the State Public Utility Commission on petition of the railroads. The proposed advances apply on intrastate shipments. No increase is allowed on shipment of mine-run coal from mines to preparation plants.

W. Va. Examining Board Named For Certification of Miners

A second examining board to conduct tests of coal miners under a statute requiring certification after April 1 was appointed late in February by Chief N. P. Rhinehart of the State Department of Mines of West Virginia. The board members are John B. Reid, Buckhannon; J. P. McKain, Monongah, and Samuel L. Adams (negro), Baxter.

Of the more than 105,000 coal miners employed in the State's biggest industry, only 28,894 applications had been received up to late in February for certificates to work in the mines, as required by a law enacted at the last session of the Legislature. Under the new certification law, only apprentices may work in a mine after April 1 without certificates of competence and qualification, and they are to be assigned at the rate of one to a miner or five to a supervisor.

Up to April 1, any miner with a year of experience in West Virginia prior to March 1 might make application for a certificate by

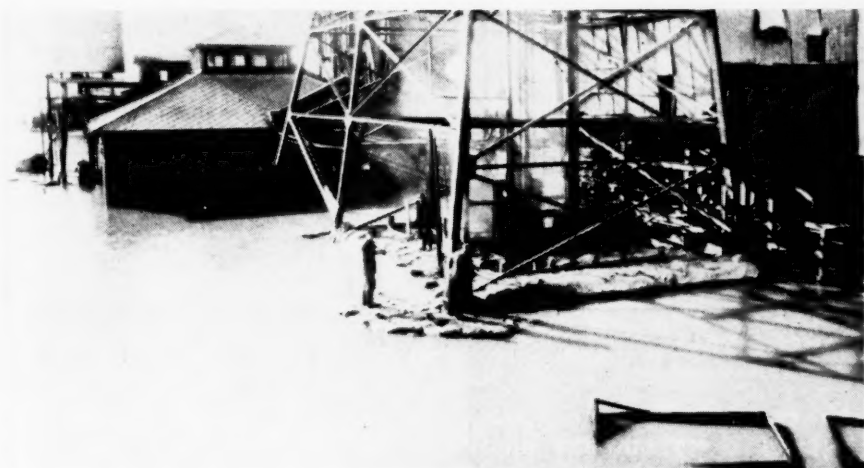
means of an affidavit attesting his qualifications, the fee being \$1. After April 1, however, a miner may obtain the necessary certificate only by taking an examination before a board such as that mentioned. Supervisory personnel is exempted from certification.

Peabody No. 43 Mine Closes, Ending 25-Year Career

Peabody Coal Co.'s No. 43 mine made its last run on Feb. 27, ending the 25-year career of one of the staunch standbys of Harrisburg, Ill. For the last several years its annual output has been about 450,000 tons with 329 men, according to Superintendent F. L. Anderson. The equipment will be removed to other Peabody operations.

This mine figured prominently in the 1937 Ohio River flood. Situated about 22 miles from the river, its main and air shafts were surrounded by water, which was kept out by sandbags, which prevented flooding of the mine. Sahara Coal Co. Mine No. 3, nearby, was flooded and damaged so badly that it could not be operated again.

The larger picture shows the method of sandbagging the main shaft, with the water at flood stage and pit cars all but submerged. The other picture shows the concrete sea wall built around the main shaft to guard



against any succeeding flood. On the wall is the high-water mark, indicating what workmen had to combat during the inundation. The Ohio River covered the flats in 1937 for 25 miles on the Illinois side. In Harrisburg the water was about 8 ft. deep over the railroad and 12 ft. over the intersection of State highways 1 and 13.

Lehigh's Anthracite Conference Postponed "For Duration"

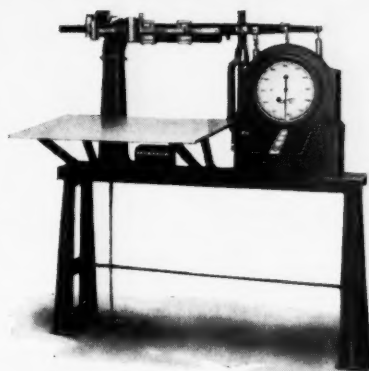
Rapidly changing world conditions involving greater demands on the time of the technical personnel of industry, with possible complications of transportation as well as anticipated acceleration of retail activities of the anthracite industry this spring, have led to the postponement of the Fifth Annual Anthracite Conference at Lehigh University, Bethlehem, Pa., originally scheduled for May 7 and 8. The postponement, which is for the duration of the war, was announced by C. C. Williams, president of Lehigh University, following a meeting of the conference committee.

Dr. Williams assured the committee that Lehigh would hold itself in readiness to resume the annual hard-coal conferences after the war is over. In commenting on the deferment, Prof. Howard Eckfeldt, who has been chairman of the conference committee since its establishment, said: "Past Anthracite Conferences have been the means of creating much forward thinking within the anthracite industry, and the place for a continuance of these conferences on the industry's activities is well established. However, the committee is unanimous in its feeling that the national defense effort be given priority."

Industrial Notes

ALLIS-CHALMERS MFG. CO., Milwaukee, Wis., has elected Edwin H. Brown as vice president in charge of engineering and development. Before assuming the new post, in which he will correlate all engineering activities and the development of new products, Mr. Brown was manager and chief engineer of the engine and condenser department for seven years. He joined the company in 1906. Administration of the engine and condenser department has been taken

Full Capacity
**WEIGHER EQUIPPED
WITH ITS OWN DIAL,
BEAM AND RECORD-
ING MECHANISM...**



STREETER-AMET Type MT-14

**Automatic Weigher
for COST SAVINGS...
SPEED! ACCURACY!**

Here is the most widely used recording weigher designed for coal mines. It is automatic. It records the weight on tape or ticket. It can be attached to your present scale or installed complete with Streeter-Amet heavy duty scale levers.

In the tippie or at the bottom of the mine shaft—Type MT-14 is attached to the weigh hopper under a rotary or cross-over dump. On a track scale it weighs cars coupled in train or singly at a speed of three miles per hour.

Why tolerate slow weighing and weight errors? Others don't! They use Streeter-Amet Weighers. How can you weigh more efficiently? Our factory trained field engineer knows... shall we tell him to call?

STREETER-AMET
4101 RAVENSWOOD - CHICAGO
Automatic Weighers • Weight Recording Attachments
Motor Truck, Platform and Industrial Truck Scales
Tare Recording • etc.



Turn "Waste Piles" Into POWER

You can recover clean coal from waste piles, culm banks, or from the refuse products of jigs or other cleaning devices, and with a very small initial investment, with a Plat-O Coal Washing Table.

Designed especially for cleaning the finer sizes . . . sizes that are impossible or impractical to recover by any other method . . . Deister Plat-O Coal Washing Tables have demonstrated their efficiency in countless installations under the widest variety of operating conditions.

Separation taking place is always in full view and adjustments can easily and quickly be made by the operator when necessary. No labor problem is involved . . . one man can handle up to 20 tables and each Plat-O Washing Table has a capacity of 15 to 20 tons per hour.

Plat-O Coal Washing Tables are still available for early delivery . . . ready to speed production for defense. Write for detailed information.

DEISTER MACHINE COMPANY Fort Wayne, Indiana

Complete information on Plat-O Vibrating Screens is contained in new Bulletin No. 27. We'll gladly send it on request.

These MESCO PRODUCTS . . . Will help you keep voltage UP at the face

It's power at the face that counts. When voltage drops, amperage rises, resulting in higher power costs and damaged machinery. There's only one way to have plenty of voltage at the face, and that's by maintaining efficient power lines. These Mosebach products will help you do that . . . and they'll help you to conserve power that is vitally needed by other industries.



Mosebach Bond Tester

A compact instrument for testing bonding efficiency and voltage losses. Enables you to find just where voltage leaks occur.



Flashweld Rail Bonds

Made by the patented Flashweld process, which makes an absolute connection between cable and terminal, gives less resistance, longer bond life. Sixteen styles to meet every bonding need.

MOSEBACH Electric & Supply Co.
1115 ARLINGTON AVENUE . . . PITTSBURGH, PA.

over by M. L. Carson, sales engineer.

WATER TREATMENT CO. OF AMERICA has appointed Herbert Kidwell, Charleston, W. Va., as district sales agent for its new technical water conditioning system for boilers and condenser cooling systems.

LINCOLN ELECTRIC CO., Cleveland, Ohio, announces the following new addresses of offices: Oklahoma City, Okla., 19 North Ellison St.; Milwaukee, Wis., 733 North Van Buren St.; Chattanooga, Tenn., 1111 James Building; Chicago, 323-5 East 23d St.; Omaha, Neb., Fuchs Machinery & Supply Co., 521 South 15th St.; Dayton, Ohio, 246 Wiltshire Boulevard.

WICKWIRE SPENCER STEEL CO., New York City, has appointed Gordon L. Crawford, previously sales manager of the Buffalo district, as assistant general sales manager with headquarters in New York. He will continue as sales manager of the company's structural products division. He joined the company in 1927 as salesman in Chicago.

INTERNATIONAL FILTER CO., Chicago, manufacturer of water-conditioning and allied equipment, has changed its corporate name to Inflico, Inc.

WORTHINGTON PUMP & MACHINERY CORPORATION has appointed Joseph T. Wright as manager of the compressor and tool division at its Holyoke (Mass.) works. He served as assistant works manager of the Lodge & Shipley Machine Tool Co. during World War I, subsequently organized the J. T. Wright Co. for the manufacture of paper drilling machines and other special equipment. This organization was later merged with Harris-Seybold-Potter Co.

CARBOLOY CO., INC., Detroit, Mich., has appointed William Harris, Salt Lake City, Utah, as sales representative and service engineer for Sinta-Set products.

PHILCO CORPORATION, Philadelphia, Pa., has elected James H. Carmine as vice president in charge of merchandising. He has been connected with Philco in positions of increasing responsibility since 1923.

Research Fellowships Offered

Four research fellowships in coal and non-metallics are offered by the University of Washington in its College of Mines in cooperation with the U. S. Bureau of Mines. Duties begin July 1 and continue for twelve months, payments being made at the end of each month and amounting to \$792 for the year. The purpose of the fellowships is to undertake solution of problems of especial importance to the State of Washington, the Pacific Northwest and Alaska. Coal problems to be studied concern its treatment and utilization. Applications, which will be passed upon in April, should be addressed to Milnor Roberts, dean, College of Mines, University of Washington, Seattle, Wash.

Tuttle-Dovey Coal Co. Formed

Peter H. Tuttle has resigned as vice president of the Cortright Coal Co., New York City, to become president of the Tuttle-Dovey Coal Mining Co., organized to represent the individual and mutual mining interests of

Mr. Tuttle and C. C. Dovey, of Johnstown, Pa. Mr. Tuttle has been president of the Wilmore Fuel Co., operating bituminous mines in Somerset and Indiana counties, Pennsylvania. Mr. Dovey headed the Cambria Fuel Co., with mines in Somerset County.

The output of the latter company is to be greatly increased when a new mine now nearing completion goes into operation. This mine, which is near Shanksville, in Somerset County, is scheduled to start production early in April. The tract under development comprises about 4,000 acres containing the D or Lower Freeport seam, and the mine is planned as a fully mechanized operation. Output will be prepared and sized in a three-track steel and timber tippie capable of handling 6,000 tons a day, which is the output aimed at when development is complete.

Order Restricting Oil Heating Released by WPB

As foreshadowed a month ago (*Coal Age*, March, p. 96), the War Production Board on March 14 released an order restricting the use of fuel oil in 17 eastern States, the District of Columbia, Oregon and Washington. Designed to conserve stocks of fuel oil in coastal areas, the order, known as Limitation Order L-56, effective immediately, forbids delivery of fuel oil for use in any new equipment unless installation is completed within 30 days, or in any converted facilities unless the conversion is completed within 10 days.

An exception is made in the case of new construction if foundations are completed within 30 days and if fuel-oil burning equipment is specified in the construction contract. Otherwise, no exceptions are made unless expressly authorized by the Director of Industry Operations.

Consumers now using fuel oils also are forbidden to accept additional supplies unless they are making full use of standby facilities using fuels or power other than electricity or natural gas. Suppliers are not allowed to make deliveries of fuel oil to such consumers unless the standby facilities are being used to the fullest possible extent.

The order also provides that the Director of Industry Operations may examine fuel-oil burning facilities already installed and suggest conversion for use of a less scarce fuel. After notice sufficient to permit such conversion, the Director of Industry Operations may forbid further deliveries of fuel oil to the consumer who fails to convert.

The order applies to the following areas: Connecticut, Delaware, Florida, Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, West Virginia, District of Columbia, Oregon and Washington.

Coal Logs Plant to Open Soon

Coal Logs Co., Inc., recently organized in Salt Lake City, Utah, to produce smokeless coal, with K. L. Storrs as president, has been granted priorities for machinery for the erection of its plant. Scheduled to open early in

Getting Disabled Employees Back on the Job is All-Important Now . . .



ACCIDENTS, illness and other emergencies are sure to strike no matter how important it is today to keep all Employees on the production line.

Provident HUMAN SECURITY Plans often help restore Employees to health quickly, because they provide funds that make sure of prompt, skilled medical treatment.

For more than a half-century the Provident has been privileged to cooperate with leading coal mining plants in bringing such protection to their workers.

Your Employees and your plant, too, may benefit from the protection afforded by
TIME-TESTED PROVIDENT

HUMAN SECURITY

designed to aid Employees in meeting the extra expenses caused by such emergencies as

- Death in Family
- Death of the Employee
- Loss of time
- through Accident or Sickness
- Dismemberment

PROVIDENT
LIFE AND ACCIDENT
INSURANCE COMPANY
CHATTANOOGA TENNESSEE



Since
1887

Specialists for more than a Half-Century in HUMAN SECURITY plans providing
Emergency Income for Employees



WHEN one of the huge axles of a steam shovel broke recently during a stripping operation, Thermit welding put the axle back in serviceable condition in 2 days—as good as new.

A standard practice for years in steel mills and in marine work, Thermit welding is being used today by many coal mines to repair crank shafts, machine frames, pump plungers, axles and other large parts.

Chief advantages of the Thermit process are the substantial savings in time and cost of replacement, permanence of the weld, simplicity in preparation of parts and lack of need for positioning or stress relieving.

Thermit welding may be done either on the customer's grounds or at one of the Metal and Thermit plants located at Jersey City, Chicago, Pittsburgh or South San Francisco.

Thermit welding of main haulage track saves power and eliminates joint maintenance. Booklet, "Continuous Rail for Main Haulage Track," sent on request.



METAL & THERMIT CORPORATION

120 BROADWAY • NEW YORK, N. Y.

ALBANY • CHICAGO • PITTSBURGH • SO. SAN FRANCISCO • TORONTO

Specialists in welding for nearly 40 years. Manufacturers of Murex Electrodes for arc welding and of Thermit for repair and fabrication of heavy parts.

April, it will have a capacity of 50 tons a day. Other units will be added as needed. Byproducts, such as fuel and lubricating oils, benzol, etc., are to be available for war needs.

Developed and patented by Mr. Storrs and associates, the process is said to carbonize fine coal with low temperature and to process it into log-shaped lumps. Though the plant is small, being in the nature of an experiment, its sponsors are hopeful that demand will be brisk in view of the growing sentiment for smokeless cities.

Conifers, Tall Palms and Ferns Graced Early Coal Forests

In earlier years three kinds of trees dominated peat bogs which long since have turned into coal, posthumously declares Reinhardt Thiessen, research chemist, coal constitution section, U. S. Bureau of Mines, with G. C. Sprunk, then his associate coal microscopist, in Technical Paper 631, just issued. Some of these resembled conifers and others were lycopods and cycadophytes.

Those of the first group were somewhat like our modern pines, spruces and yews; those of the second were usually either (1) Sigillarias, with noble columnar trunks, 100 or more feet tall and of a diameter up to or exceeding 6 ft., rising without a branch to break their stark impressiveness and with leaves shaped like coarse grass sprouting from their tops as water would emerge from a vertical pipe to form a cascade around its summit; or (2) Lepidodendrons, more like ordinary broad-leaved trees with, in this instance, diamond-shaped scars on the bark where leaves once had attached themselves, which scars, when the leaves fell off, still continued to enlarge until they met one another, turning the bark into a continuous mosaic of marvelous regularity.

The lycopods were the monarchs of the forests. But the various kinds of trees did not by any means exist in unvarying proportions in all the peat bogs or in all layers of the same peat bog. Even today, as one travels the country, one notes that certain forests are mainly of hardwoods and others of evergreen, and similar difference doubtless existed even in Paleozoic time.

Both in their trunk and leaves, conifers made and stored much resin and as, with the passage of time, these more resistant carbohydrates have not decayed and as the woody matter has shrunk considerably, their percentage in the coal substance of today is greater than it was in the solid portion of the erstwhile peat.

The third or fern group, the cycadophytes, contributed abundantly to Paleozoic vegetation. Some coals or parts of coals are composed predominantly or almost completely of the remains of cycadophytes, of which the lower part of the Pittsburgh coal bed is a good example.

Perhaps it is the fern and lycopod vegetation in coal that makes it necessary to add a binder to most slacks when briquetting them. This, however, Dr. Thiessen does not suggest. Some lycopod remains exhibit resinous-like material, but their manner of occurrence suggests their derivation from associated conifers, though whether as a result of "material absorbed into the cell cavities from fluid decomposition products (humic acids) while the plant tissues were in the peat

stage," as urged by Hickling and Marshall, is a question.

Dr. Thiessen, seemingly indulgent to this belief, would, as a low-temperature coalification advocate, be likely to be skeptical of any suggestion that the resins were softened by heat in the later "dynamo-chemical stage" and so flowed and forced their way into the lycopod cells and circumferentially between one year's growth and the next, but the surmise nevertheless seems possible. It may be noted that Dr. Thiessen speaks of the "dynamo-chemical stage" and forbears to add the word "thermal" thereto, as most geologists, possibly less well posted, might be disposed to do.

Equalization Charges Required On Coke Cargoes to Canada

The Coal, Coke and Iron Ore Committee, Central Freight Association Territory, and the Coal and Coke Committee, Trunk Line Territory, in a notice dated March 3 states that United States carriers and their agents must file, effective March 15, on ten days' notice, under appropriate authority of the Interstate Commerce Commission, Canadian currency equalization charges applicable upon all shipments of coke, coke breeze, coke dust and coke screenings in straight or mixed carloads, shipped from origins in the United States to destinations in Canada via gateways at Detroit and Port Huron, Mich., and east thereof.

The charges were computed on the lowest rate from each origin point or group to a Canadian gateway based on the existing currency rate of exchange—i.e., 10 percent. Copies of the tariff of equalization charges may be obtained from Agent B. T. Jones, C. F. A. Tariff Bureau, 608 South Dearborn St., Chicago.

OPA and Coal Division Cooperate To Prevent Inflated Prices

Announcement of arrangements through which the Bituminous Coal Division and the Office of Price Administration will cooperate in taking whatever steps may be necessary to prevent war-time inflationary prices for soft coal was made March 14 by the OPA following an exchange of letters by Secretary of the Interior Harold L. Ickes, Solid Fuels Coordinator, and Price Administrator Leon Henderson. Under the arrangement, the Coal Division will recommend to OPA steps leading to appropriate action under the powers vested in OPA by the Emergency Price Control Act with reference to bituminous coal prices charged by producers, distributors and sales agents. OPA also will welcome any advice the Division may offer regarding prices of soft coal sold at retail.

Under the arrangement the Division is empowered to handle hearings, conferences, correspondence, etc., where needed in order to discharge its recommendatory function in regard to producer and wholesale prices.

The arrangement was worked out under Sec. 201 (a) of the Price Control Act providing that the Price Administrator may utilize the services of other federal agencies in administering the act.

"In thus making available to OPA the

WAR
PRODUCTION
BOARD

Help the W.P.B. plan War Production for the Coal Industry!

Check your 1942 needs NOW!

Look over the list below, then write us. This data is NOT to be considered an order—and will be held confidential except to the W. P. B. Its for your benefit and ours—write us today.

This creates no obligation on your part

In order to estimate on allocation of raw materials and manufacturing facilities, to keep coal mines productive, the W. P. B. wants manufacturers to list what operators may need in 1942-43.



GEMCO TRU-BLU TOOLS

RATCHET TYPE PUNCHES

The "Standard Gemco Tru-Blu Punches" are absolutely the lightest weight, heavy duty punches on the market. Made from "Gemloy" steel they are the strongest punches made for hardest service requirements.

- No. P-4—Gemco Tru-Blu Punch, wt. 22 lbs., for 8-40 lb. steel rail or equivalent
- No. P-7—Gemco Tru-Blu Punch, wt. 26 lbs., for 8-70 lb. steel rail or equivalent
- No. PR-4—Ratchet Punch, wt. 30 lbs., for 8-40 lb. steel rail or the equivalent
- No. PR-7—Ratchet Punch, wt. 34 lbs., for 8-70 lb. steel rail or the equivalent
- No. P.R.R.S.—4 or 7—Ratchet and Screw Assembly for converting standard punches to ratchet type

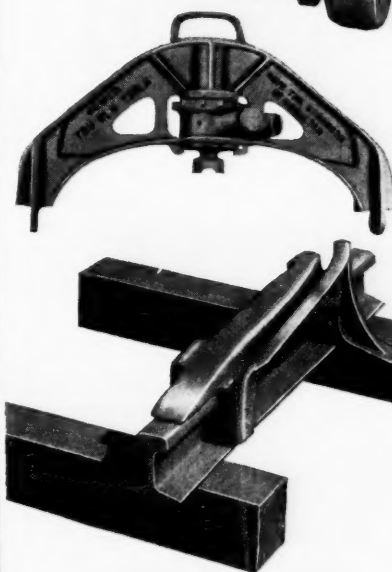
RAIL BENDERS

Gemco Tru-Blu Roller Bearing Equipped Benders—Straighteners (For bending and straightening Steel Rails, Structural Shapes, Rods, Bars, etc.)

Gemco Tru-Blu Standard Type Benders—Straighteners for from 8-140 lb. steel rail or equivalent rod, bar, etc.

Gemco Tru-Blu Ratchet Type Benders—Straighteners for from 8-140 lb. steel rail or equivalent rod, bar, etc.

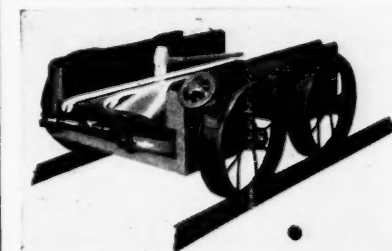
Complete with heavy duty Timken Roller Thrust Bearing—Cuts friction, gives easy operation, saves labor.



DERAILERS

The New Standard Derailers are designed to give an exceedingly strong unit with light weight secured through the use of special high alloy "Gemloy" steel, carefully heat treated and tempered for maximum strength.

- D-4—Gemco Tru-Blu Derailer, 8-40 lb. rails.
- D-9—Gemco Tru-Blu Derailer, 40-90 lb. rails.



CARS

Gemco Tru-Blu Cars—Narrow Gauge—Standard Gauge for tools, supplies and every other use by section crews, track layers, drillers, inspectors, shot firers, etc. 18" to 56 1/2" Gauges

The "Gemco Tru-Blu" Tool and supply cars, cardox cars, cars for section crews, high speed (motor driven) cars for trouble shooting and "hot shot" inspection service, etc., are designed to have a definite place for all tools, accessories and supplies used on the job.

Write for complete itemized parts list—including illustrations, descriptions, prices and full data.

Buy now—while stocks are on hand. Complete bulletins sent promptly upon request.

GIBRALTAR EQUIPMENT & MFG. CO.

ALTON, ILLINOIS

KOPPEL

ALL STEEL MINE CARS

BIGGER PAY LOADS

QUICK

CLEAN DUMPING

ACTION



Koppel All-Steel Mine Cars are especially designed to give long, economical service and easy handling in coal mine service. Designs include end dump and rotary dump in high-capacity, low-height types; also in 12 to 50 cu. yd. automatic air dump cars for open pit service. Write for bulletins 66 and 71 or send us your inquiry.

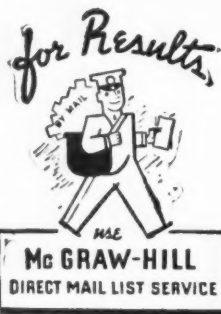
KOPPEL



PRESSED STEEL CAR COMPANY, INC.

(KOPPEL DIVISION)
PITTSBURGH, PA.

WHAT MAKES A MAILING CLICK?



Advertising men agree . . . the list is more than half the story. McGraw-Hill Mailing Lists, used by leading manufacturers and industrial service organizations, direct your advertising and sales promotional efforts to key purchasing power.

In view of present day difficulties in maintaining your own mailing lists, this efficient personalized service is particularly important in securing the comprehensive market coverage you need and want. Investigate today.

McGraw-Hill Publishing Co., Inc.

DIRECT MAIL DIVISION

330 West 42nd Street

New York, New York

extensive facilities and information of the Bituminous Coal Division, together with the services of his staff of experts in preparing recommendations," said the Office of OPA. "Secretary Ickes is facilitating administration of the Price Control Act on an effective and economical basis."

In view of the above arrangement, Dan H. Wheeler, acting director of the Bituminous Coal Division, issued a statement on March 16 to the effect that "the developments referred to above make it unnecessary to go forward at this time with steps leading to the disposition of Docket No. A-983 [maximum price hearing]. Accordingly, appropriate instructions have been given Mr. Larabee, the presiding examiner in that proceeding, that he defer presentation of his report therein. I am, however, arranging for the Division staff to proceed with a careful study and analysis of all of the materials presented or filed in that proceeding."

Illinois Strippers Plant 2,000,000 More Trees

Members of the Illinois Coal Strippers' Association, in continuation of their long-range forestation and general reclamation program, are planting two million trees this spring on 2,028 acres of land worked over by stripping operations throughout the State, according to an announcement by Livingston E. Osborne, Director of Conservation. Orders for the required planting stock, comprising 23 different species of trees, have been placed with the department's forestry division at an estimated cost of \$21,776, an average of \$10.73 per acre. Deliveries began to roll out of the State tree nurseries to southern Illinois mines late in February.

When this program is completed Illinois strip-mining companies will have forested about 7,250 acres of worked-over land with a grand total of 7,127,000 trees during the period from 1930 to 1942. Under a cooperative agreement between the coal-mining companies and the Division of Forestry the operators plant at least as many acres of trees as were stripped the preceding year.

More Technologists Needed In Government Service

Technologists on the Federal Civil Service Commission employment lists are not sufficient for war-time needs. Therefore the Commission has reissued an announcement of opportunities for government employment with slightly modified requirements. Salaries for the positions range from \$2,000 to \$5,600 a year.

By technologist is meant a person experienced in "the necessary production, engineering and scientific research work essential for the successful operation of an industrial plant, where such plant operation is based upon a thorough and expert knowledge of a branch of an applied science," such as explosives, fuels, plastics, rubber, minerals or textiles.

For the junior positions (\$2,000 a year), applicants no longer will have to take a written test, and, as before, no such test will be given for the higher positions. The

maximum age limit for all the grades has been raised to 60 years. Copies of the announcement (No. 188) and the forms for applying may be obtained at first- and second class post offices or from the Civil Service Commission, Washington, D. C.

Obituary

ROY HARPER, 51, manager, Service Coal & Mining Co., Belleville, Ill., died March 3 at his home in that place after an illness of six months. He had been a mine executive for 31 years.

JOHN S. VAN WINKLE, vice president of the Dawson Collieries, Inc., and managing director of the Dawson Daylight Coal Co., Dawson Springs, Ky., died March 4. He was part owner of the Danville *Advocate-Messenger* and had extensive land holdings in Kentucky, Texas and Canada.

HAL E. BOOTH, 61, chairman of the board of the Lake Shore Lumber & Coal Co., Erie, Pa., and prominent in the coal industry for a quarter century, died March 8 in a Pittsburgh hospital after an illness of two months. He was vice president in charge of sales of the Pittsburgh Coal Co. from 1928 to 1938. Joining the Hanna Coal Co., in 1901, he served at various times as a director of the Milwaukee-Western Fuel Co., Pike-Floyd Coal Co. and the Pittsburgh Coal Carbonization Co.

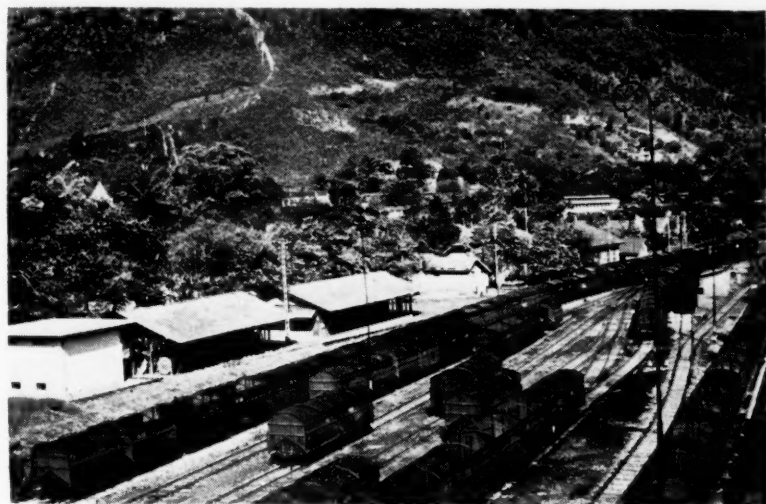
BERNARD DOMINIC BYRNES, night foreman of No. 3 mine of the Consolidation Coal Co., died suddenly Feb. 8 at his home in Frostburg, Md.

JOHN CAMPBELL, 39, mine foreman for the Carrs Fork Coal Co., Allock, Ky., died March 11 of injuries suffered two days previous when a taxicab in which he and his wife were riding struck a 75-ton rock that had rolled off a mountain and lodged on Highway 15, near Happy, Ky.

E. J. CHRISTY, 60, chief engineer and purchasing agent, Wheeling Township Coal Mining Co., Adena, Ohio, died Feb. 26 of a

heart attack. He started coal mining at the age of 17 with the John L. Jones Coal Co., Burgettstown, Pa., and went with Wheeling Township in 1918.

JOHN JONES, 66, until last year and for many years superintendent of the Peerless mine of the Peerless Coal Co., Helper, Utah, died from cerebral hemorrhage March 9 in a hospital at American Fork, Utah.



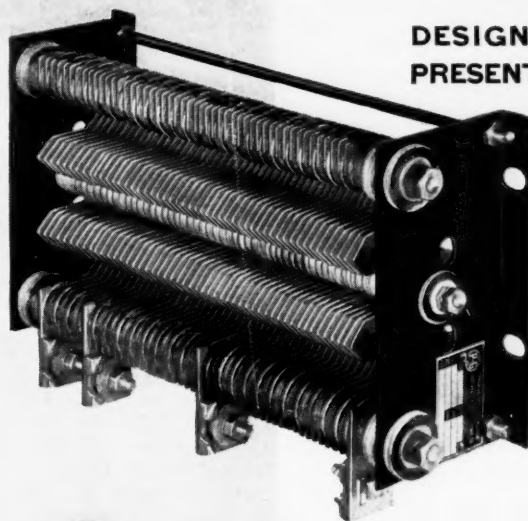
Wide World Photo

Some of the South Sea Loot Sought by the Japanese

Part of the treasure of the Dutch East Indies consists of coal, which Japan seeks for her factories. This railroad yard with its many coal cars adjoins the Ombilin coal mines, at Sawah Leentoh, on the Padang Plateau, Sumatra.

P-G Steel Grid RESISTORS

CONSISTENTLY PROVE THEIR VALUE
for MINING MACHINES



DESIGNED TO FIT YOUR
PRESENT RESISTOR SPACE

Built of steel and mica—nothing to break—no warping or hot spots—constant in resistance value, regardless of temperature or age. Not affected by vibration, moisture or corrosive fumes. Continuous trouble-free service is assured with . . .



"The Resistor you can Install and Forget"

THE POST-GLOVER ELECTRIC COMPANY

ESTABLISHED 1892

221 WEST THIRD STREET, CINCINNATI, OHIO

QUALITY



PACKING

METALLIC & SEMI-METALLIC

PACKING

for

MINE PUMPS

*"The Packing that gets
the Repeat Orders"*

For deep mine pumps. Resists acid mine waters. Keeps grit out of stuffing box. Three types.

• MARLO ALL PURPOSE

METALLIC PACKING

Best ever devised. Will not freeze at 70° below. Soft, pliant, like fibrous types, yet easier to handle. Won't cut, score or corrode moving parts.

• "TWIN-TWIST"

SEMI-METALLIC PACKING

Metal strands twisted with asbestos. Antifrictional. Durable. Economical. Remarkable compressibility. Never hardens. For temperature up to 550° F.

• "RED WATER"

SEMI-METALLIC PACKING

Most modern development for all hydraulic applications. A solid-packing vegetable fibre combined with metal strands. Retains form under any conditions.

Let us serve you!

THE MARLO COMPANY

38 HOWARD ST.

NEW YORK, N. Y., U. S. A.

"SAFETY-PULL"

Just What Its Name Implies

And It's Giving
Thousands of SAFE

PULLS and LIFTS

to help speed up our
"American Victory Program"



COFFING'S

New Improved Model G Series "Safety-Pull" Ratchet Lever Hoists are built in convertible capacities ranging from 3/4 to 15 tons, yet they weigh only 14 to 150 pounds. Greatly increased production facilities make it possible to give immediate service. For further information consult your supply house or write for our Catalog No. GG-5

COFFING HOIST COMPANY
800 Walter Street Danville, Illinois

RATCHET LEVER HOISTS
SPUR GEARED HOISTS

ELECTRIC HOISTS

LOAD BINDERS

TROLLEYS

DIFFERENTIALS

FOR SAFETY'S SAKE, SUPERIOR COUPLINGS



Drop Forged Links

Drop forged for strength, Superior Swivel and Single Link Couplings are built to stand the gaff. No welds to let go with resulting wrecks. Superior Couplings on your mine cars will prevent accidents and reduce haulage costs. Order Superior Couplings for your replacements and specify them on new equipment.

**DROP FORGED SWIVEL
COUPLINGS**



PITTSBURGH

KNIFE & FORGE CO.

716 Chateau Street
N. S., Pittsburgh, Pa.

Denies Permit for Oil Pipeline

Hopes of Petroleum Coordinator Ickes that shortages of petroleum products on the eastern seaboard might be alleviated by construction of the so-called national defense pipeline were blasted by the War Production Board during the first week in March. The WPB flatly refused, for the third time, to allocate any steel for construction of the line.

Fire Destroys Superfuel Tipple

Fire in the tipple of the Superfuel Coal Co., Paris, Ark., on March 5 caused damage estimated at \$20,000. The tipple, all equipment and three cars of coal were destroyed. The structure will be rebuilt as quickly as possible, according to George Minnier, general manager.

Coal-Mine Accident Fatality Rate Again Tends Upward

Accidents at coal mines of the United States caused the deaths of 117 bituminous and 13 anthracite miners in January last, according to reports furnished the U. S. Bureau of Mines by State mine inspectors.

With a production of 48,540,000 net tons, the accident death rate among bituminous miners was 2.41 per million tons mined, compared with 1.84 in January, 1941.

The anthracite fatality rate from accidents in January last was 2.87, based on an output of 4,532,000 net tons, against 4.42 in the corresponding month of last year.

For the two industries combined, the accident fatality rate in January last was 2.45, compared with 2.10 in the first month of 1941.

Fatalities during January last, by causes and states, as well as comparable rates for the first month of 1941 and 1942, are shown below.

Making Amends

In the February issue of *Coal Age*, p. 71, col. 3, paragraph 2, the Harmony operation of the Linton-Summit Coal Co., near Sullivan, Ind., is designated as equipped with a Link-Belt air-pulsated jig. This is incorrect, as a McNally-Norton automatic washer is used there. In the table on p. 73 of the same issue, referring to the same operation, footnote 27 is incorrect in so far as it refers to the McNally-Pittsburg Mfg. Corporation in stating "forwarded from 1940," as the contract for this equipment was placed and delivery made in 1941.

Trade Literature

AIR COMPRESSORS—Worthington Pump & Machinery Corporation, Harrison, N. J. Bulletin H-621-B8 gives construction features, specifications and selection table of Type VS air compressors, vertical single-cylinder, single-stage, air- or water-cooled.

BALL BEARINGS—New Departure, Division General Motors Corporation, Bristol, Conn.

UNITED STATES COAL-MINE FATALITIES IN JANUARY, 1942, BY CAUSES AND STATES

State	Underground							Total Underground	Shaft	Open-cut	Surface	Grand Total
	Falls of Roof	Haulage	Gas or Dust Explosions	Explosives	Electricity	Machinery	Other Causes					
Alabama	1	1	1	1	1	1	1	6	1	1	1	11
Arkansas	1	1	1	1	1	1	1	6	1	1	1	11
Colorado	1	1	1	1	1	1	1	6	1	1	1	11
Illinois	1	1	1	1	1	1	1	6	1	1	1	11
Indiana	1	1	1	1	1	1	1	6	1	1	1	11
Iowa	1	1	1	1	1	1	1	6	1	1	1	11
Kansas	1	1	1	1	1	1	1	6	1	1	1	11
Kentucky	1	1	1	1	1	1	1	6	1	1	1	11
Montana	1	1	1	1	1	1	1	6	1	1	1	11
Ohio	1	1	1	1	1	1	1	6	1	1	1	11
Pennsylvania (bituminous)	1	1	1	1	1	1	1	6	1	1	1	11
Tennessee	1	1	1	1	1	1	1	6	1	1	1	11
Utah	1	1	1	1	1	1	1	6	1	1	1	11
Virginia	1	1	1	1	1	1	1	6	1	1	1	11
Washington	1	1	1	1	1	1	1	6	1	1	1	11
West Virginia	1	1	1	1	1	1	1	6	1	1	1	11
Wyoming	1	1	1	1	1	1	1	6	1	1	1	11
Total bituminous	48	20	33	1	3	1	1	107	2	2	6	117
Pennsylvania (anthracite)	9	1	1	1	2	1	1	12	1	1	1	13
Grand total	57	21	33	1	5	1	1	119	2	2	7	130

DEATHS AND FATALITY RATES AT UNITED STATES COAL MINES, BY CAUSES*
January, 1941 and 1942

Cause	Bituminous				Anthracite				Total			
	Number Killed	Killed per Million Tons	Number Killed	Killed per Million Tons	Number Killed	Killed per Million Tons	Number Killed	Killed per Million Tons	Number Killed	Killed per Million Tons	Number Killed	Killed per Million Tons
Underground:	1941	1942	1941	1942	1941	1942	1941	1942	1941	1942	1941	1942
Falls of roof and coal	46	48	1.044	0.989	12	9	2.411	1.986	58	57	1.183	1.074
Haulage	14	20	.317	.412	3	1	.603	.221	17	21	.347	.395
Gas or dust explosions:												
Local	1	1	.023	...	2	...	.401	...	3	...	.061	...
Major	6	33	.136	.680	...	...	...	...	6	33	.122	.622
Explosives	4	1	.091	.021	1	...	.201	...	5	1	.102	.019
Electricity	1	3	.023	.061	...	2	...	.441	1	5	.020	.064
Machinery	4	1	.091	.021	...	...	...	...	4	1	.082	.019
Shaft	1	1	...	.041	1	...	.201	...	1	2	.020	.038
Miscellaneous	1	1	...	.021	1	...	.201	...	1	1	.020	.019
Stripping or open-cut	2	2	.045	.041	1	...	.201	...	3	2	.061	.038
Surface	3	6	.065	.124	1	1	.201	.221	4	7	.082	.132
Grand total	81	117	1.838	2.411	22	13	4.420	2.869	103	130	2.100	2.450

* All figures subject to revision.

Booklet R, Form A-58, contains a listing of all standard New Departure ball bearings together with the bearing numbers of competitors' units with which they will interchange.

BELT CONVEYOR IDLERS—Continental Gin Co., Birmingham, Ala. Bulletin 1D-103 describes the company's new line of idlers, giving 21 reasons why these units have gained acceptance by industry.

BOILER LININGS—Ramtite Co., Chicago. Bulletin explains many improvements in methods of setting and relining boilers as well as a discussion of the engineering properties of Ramtite plastic refractories.

CONDENSATE TESTER—Leeds & Northrup Co., Philadelphia, Pa. Catalog N-95-163 (1) describes a new signaling controller whose self-contained signal lights show whether condensate is above a specified minimum purity and is safe to use again or is below this limit and should be diverted to waste.

CRANE CARRIAGE—Six Wheels, Inc., Los Angeles, Calif. Bulletin CU-142 shows how the Maxi one-man crane under-carriage does a safe, smooth and speedy job of loading and moving a variety of materials.

DIESEL ELECTRIC LOCOMOTIVES—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Booklet B-3000 describes diesel electric locomotives of from 10 to 80 tons for large industrial plants, mines and main-line hauling. Characteristics of these units are compared to steam and mechanical locomotives

from the standpoint of availability, reliability, safety and pulling power. Performance operation, motor and control data are given for 76 typical installations.

DUST COLLECTOR—American Foundry Equipment Co., Mishakawa, Ind. Catalog 72, prepared as a handy manual for plant engineers in the selection of proper control equipment for specific dust problems, provides full information and illustrations of models available, with operating data, construction features and basic specifications of American "Dustube" cloth-bag type collectors.

DIESEL POWER—Caterpillar Tractor Co., Peoria, Ill. Booklet Form 7283 shows the part played by this company's products in the victory program.

EARTH MOVING—R. G. LeTourneau, Inc., Peoria, Ill. Folder Form A-280 shows correct job methods with this company's equipment on every phase of earth-moving or construction work. Form A-276 is the complete line catalog, giving model and action pictures, with condensed specifications. A-281 outlines efficient methods and equipment for building defense projects. A-284 covers plant extension, coal storage and stock piling, railway grade building and maintenance among many applications of LeTourneau equipment.

EXPLOSIVES—Atlas Powder Co., Wilmington, Del. Folder shows nine ways to get the most from explosives, including suggestions on loading, cutting, drilling and stemming, with a view to prolonging life of equipment and improving safety.

MOTORS AND CONTROLS—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Pocket-size "slide-rule" selector is designed as a guide in selection of proper type of motor for each of 44 industrial applications, a table listing various uses and indicating which of the four principal types of a.c. motor should be selected. The specifications, performance ratings and control classes for the required type are readily determined by making the corresponding setting on the slide.

PRESSURE RECORDERS—Foxboro Co., Foxboro, Mass. Catalog 22-A covers instruments for the measuring and recording of industrial pressures of all kinds, in ranges from 1 in. of water to 20,000 lb. A complete list of standard ranges is given, accompanied by full-size reproductions of specimen charts.

PROTECTIVE LIGHTING—Goodrich Electric Co., Chicago. Folder 101, "Plant Protection Begins With Floodlighting," describes and illustrates various styles of porcelain enameled floodlights available to meet demands for illumination in different locations. In addition to covering many popular styles of permanent and portable floodlights the folder introduces a new fixture known as the Elipso Standlite designed for high-intensity and sharply defined lighting around property lines without illuminating buildings and grounds.

PUMPS—Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin B6018-B gives complete engineering data on SSUnit pumps and the Electrifugal. Head-capacity tables, dimension charts, performance data and engineer-

HELP FOR MINES SPEEDING UP DEFENSE PRODUCTION

HOLMES EQUIPMENT WIDELY USED

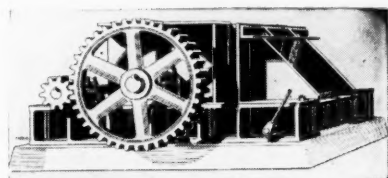


• Elevator Buckets, Conveyors, Pans, Screening Equipment, Hoists, Rope Drums, Sheaves, Special Lowering Chutes, Special Machinery... all designed and constructed to give maximum service advantages. If you are in need of equipment such as Holmes has so successfully produced, write, wire, or phone—we will give you our immediate cooperation.

HOLMES MAKES emergency repairs
—a phone call will bring a Holmes representative at once—phone 1430.

ROBT. HOLMES & BROS.
INCORPORATED
DANVILLE ILLINOIS

A NEW VERSION OF AN OLD TYPE



"PENNSYLVANIA" TYPE "K" SINGLE ROLL COAL CRUSHER

With this advanced design, in rugged STEELBUILT construction, far more accurate sizing is possible to meet Code requirements through quick adjustability, in a range from 3/4" to 8".

Further—real protection is provided by improved Safety Toggle Equipment, which quickly passes Tramp Iron, and instantly returns Breakerplate to crushing position.

Seven (7) sizes afford a capacity range from 50 to 1000 tons per hour.

Send for Bulletin No. 2006.

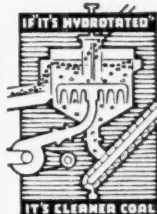
Also, — **"PENNSYLVANIA"**
BRADFORD BREAKERS, BRADMILLS,
GRANULATORS, HAMMERMILLS
PUT YOUR COAL PREPARATION PROBLEMS UP TO US.



Liberty Trust Bldg. Philadelphia
Representatives in Principal Centers.

ANTHRACITE IS "Prepared"

TO MEET THE INCREASED
WAR-TIME DEMANDS



Output has been increased, quality has been improved by the installation of Wilmot "Hydrotators" at many breakers. "Preparation" is at its peak for the emergency!



KOHINOOR BREAKER—Typical of the Anthracite Preparation Plants designed, built and equipped by Wilmot Engineering Company, Hazleton, Pa.

WILMOT
A GREAT NAME IN THE COAL INDUSTRY
HYDROTATOR
COAL Preparation UNITS

ing recommendations are supplied as aids in selecting pumps for various applications.

PUMPS—Chain Belt Co., Milwaukee, Wis. Bulletin 400 contains detailed information and specifications concerning the design and manufacture of Rex speed prime pumps. Included are data on how to pick a pump for a specific job.

PYROMETERS—Wheelco Instruments Co., Chicago. Defense Bulletin No. 1 provides a clear, concise explanation of how the national defense program affects purchase, use and maintenance of temperature measuring and control instruments. It is designed to aid users to gain maximum life and efficiency from pyrometric equipment now installed and being installed.

REMOTE SPEED INDICATOR—Reeves Pulley Co., Columbus, Ind. Bulletin G-427 describes a new type electric remote speed indicator for use with Reeves variable speed control equipment, designed to increase the utility of Reeves drives.

ROTARY SWITCHES—Roller-Smith Co., Bethlehem, Pa. Catalog 7140 describes and illustrates rotary-type instrument, control, transfer and auxiliary switches. Diagrams of connections and switch developments are shown for each switch listed.

RUBBER PRODUCTS—B. F. Goodrich Co., Akron, Ohio. Four pamphlets tell how to get the most service out of industrial rubber products. No. 1 is on transmission belting; No. 2, conveyor belting; No. 3, V-belt drives; No. 4, belt salvage.

SHEAVES—Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin B6082-A, on Vari-Pitch Texrope sheaves, describes stationary and motion-control units, with operating diagrams, sizes and dimensions.

SPEED CHANGERS—Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin B6013A shows how to step up production from available machine capacity by increasing machine flexibility with Vari-Pitch speed changers. Diagrams, operating data and selection tables present facts on speed-changer units.

TOOL CONSERVATION—Henry Disston & Sons, Inc., Philadelphia, Pa. Booklet outlines the company's conservation control plan, telling how to obtain greater efficiency from and make tools last longer, such as saws, tool bits, files, etc.

VARIABLE SPEED CONTROL—Reeves Pulley Co., Columbus, Ind. Bulletin G-423 describes and illustrates numerous uses and applications for Reeves variable speed control equipment in defense industries and plants on many different types of machines, showing how to increase production and cut waste.

VARIABLE SPEED TRANSMISSION—Ideal Commutator Dresser Co., Sycamore, Ill. Catalog-handbook gives recommendations, application data and engineering information on Ideal variable speed pulleys, transmissions, and automatic tension control motor base. Included are sizes, rated capacities, design and operating details, how to install, etc.

V-BELT DRIVES—L. H. Gilmer Co., Philadelphia, Pa. Catalog, known as Gilmer Guide, presents a complete service on V-belts, streamliner V-belt for connector, sheaves, including pulleys for V-to-flat drives, all conveniently arranged. Included is engineering material intended to save time in solving power transmission problems.

V-BELTS—Medart Co., St. Louis, Mo. Folder cites four salient features of all-black cable-core V-belts.

VIBRATING SCREEN—Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin B6151A gives a complete description of the new Ripl-Flo vibrating screen. It operates on the principle of so-called "perfect-circle" vibration, described as a regulated motion imparted to every portion of the screen surface by balanced two-bearing eccentric shaft mechanism situated between the unit's decks.

VIBRATING SCREEN—Robins Conveying Belt Co., Passaic, N. J. Bulletin 115 illustrates and describes in detail the Robins-Gyrex screen. A novel "X-ray" section permits the reader actually to build up a complete screen. There also is a three-page spread in color containing installation views of these screens in varied applications. Included are technical data on the selection and use of vibrating screens as well as complete dimension tables for the various standard sizes and styles available.

WIRE ROPE—Macwhythe Co., Kenosha, Wis. Bulletin 42-12 is the initial number of a publication of "wire-rope users' experiences plus a science of wire-rope application," to be issued occasionally to help do work faster, better and at minimum cost.

PROFESSIONAL SERVICES

Consulting

Engineering

Examinations

Specialists

Geologists

Reports

Plant Design

Operation

Construction

ALLEN & GARCIA CO.

ENGINEERS AND BUILDERS OF
MODERN COAL OPERATION

Authoritative Valuations and Reports of
Mining Properties, Equipment and Opera-
tion

332 S. Michigan Ave., Chicago
120 Wall Street, New York, N. Y.

C. C. MORFIT

Mining Engineer

Construction Operation, Management
Valuation

11 Broadway, New York

EDWARD V. D'INVILLIERS ENGINEERING CO.

GEOLOGIST AND MINING ENGINEERS
Specialists in examination and valuation of bitu-
minous coal properties; Investigations of operating
conditions, costs and markets; development of min-
eral resources.

Private records covering 40 years of professional
activity in coal fields of United States and Canada.
121 N. Broad St., Philadelphia, Pa.

Stuart, James & Cooke, Inc.

ENGINEERS

Coal plant design, construction, supervision and
operation. Operating cost surveys and analysis.
Power surveys and electrifications. Examinations
and valuation of coal properties.

52 William St. New York
Hibbs Building
Washington, D. C.

EAVENSON, ALFORD AND AUCHMUTY

MINING ENGINEERS

Coal Operation Consultants
Valuations

Koppers Bldg. Pittsburgh, Pa.

TEMPLETON-MATTHEWS CORPORATION

Designing Engineers—Consultants—Builders

Practical Application of Skilled
Engineering to your Coal
Preparation Problems

1003 Sycamore Bldg. Terra Haute, Indiana

J. H. FLETCHER

Consulting Engineer

Mining Reports, Appraisals and Power Surveys
Engineering Management of Coal Mines
Automotive Gathering System
Mine Layouts

Telephone—Harrison 5151
McCormack Building Chicago, Ill.

L. E. YOUNG

Consulting Engineer

MINE MECHANIZATION
MINE MANAGEMENT

Oliver Building—Pittsburgh, Pa.

T. W. GUY

Consulting Engineer

COAL PREPARATION

To Yield Maximum Net Returns
Face and Product Studies
Plant Design and Operation
Coal Sampling

Kanawha V. Bldg., Charleston, W. Va.

READERS MAY CONTACT

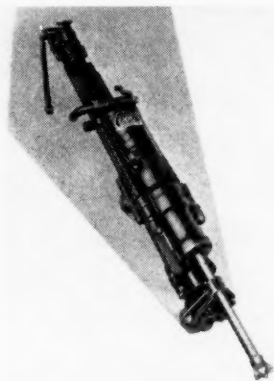
the consultants whose cards appear on
this page with the confidence justified
by the offering of these special services
nationally.

WHAT'S NEW

IN COAL-MINING EQUIPMENT

DRIFTER

Ingersoll-Rand Co., Phillipsburg, N. J., announces the D-505 drifter, the latest addition to its family of rock drills. Incorporating many new and improved features, it is the fastest and most durable drifter ever produced by the company. The wall section



of the front head is 10 percent thicker than that of the previous 4-in. drifters; the shank aligner is 18 percent longer and 8 percent thicker, and an improved chuck design of heavier construction has been included; the design of the piston-stem cushion bearing permits a heavier metal section in the cylinder and furnishes better support.

TIMBER LIFTING JACK

Duff-Norton Mfg. Co., Pittsburgh, Pa., offers a new mine-timber lifting jack, a lightweight, high-speed unit designed to cut timbering costs. By simplifying design and through use of light, high-strength materials, the weight of the jack has been kept to a minimum. It is quickly set up and adjusted, and fast operating, according to the manufacturer. Only a 13-in. manual lift is required to place the timber on the platform. The jacks are used singly or in pairs, as required.

DEMAGNETIZER

A new, powerful, portable demagnetizer is announced by the Ideal Commutator Dresser Co., Sycamore, Ill. It quickly demagnetizes tools, drills, punches, dies and work held in magnetic chucks. Abrasive particles such

as metallic dust, flakes, fine chips, etc., that simply can't be wiped off clean with a rag are easily removed after a single pass across the magnetic poles. Large parts may be demagnetized in a similar manner, except that the demagnetizer, which is light in weight and easy to handle, is moved over the heavy, bulky work.

The Ideal demagnetizer has an indicating light which shows when the current is on and has all-metal streamlined case; rating, 115 volt, 50-60 cycle (5 amp). Other voltages and frequencies are available. Size is only 5½x10½x4½ in.; weight, 17 lb.

COAL DRYER

Link-Belt Co., Chicago, has developed a new dryer for effective removal of surface moisture from sized coal. Known as the Link-Belt "SS" dryer, it combines mechanical dehydration with heat drying and is available for drying sized coal of 10-mesh and up.

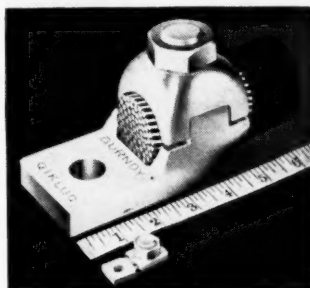
The new unit comprises a drying chamber with perforated reciprocating-plate drying surface, coal inlet and outlet, hot-air inlet from a coal-fired furnace, and an exhaust fan to draw the hot air into the chamber, over and through the thin bed of coal, down through perforations in the reciprocating plate, to the exhaust stack.

Operation of the moving element is analogous to that of the familiar shaker screen except that in the case of the "SS" dryer the perforations are very small and are intended only for passage of the drying air. As the coal passes through the dryer in

a thin bed at slow speed, the manufacturer asserts that it is thoroughly and uniformly dried with low-temperature air and discharged relatively cool; also that comparatively little power is required for operation of the exhaust fan and reciprocating plate.

CABLE CONNECTOR

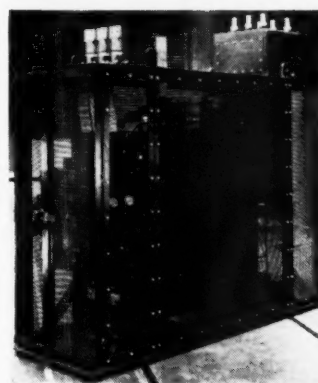
A new cast Qiklug for electrical cable terminal connections is now being manufactured by the Burndy Engineering Co., Inc., New York City. This connector,



QA(-)B, takes a wide range of conductor sizes, is very compact and is provided with serrations on cable-clamping elements on all but the very small sizes.

DISTRIBUTION UNIT FOR SECONDARY NETWORKS

Especially designed for industrial plants using secondary network systems, a new air-cooled network distribution unit is announced by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Consisting of a high-voltage double-throw primary transfer switch, an air-cooled three-phase transformer and network



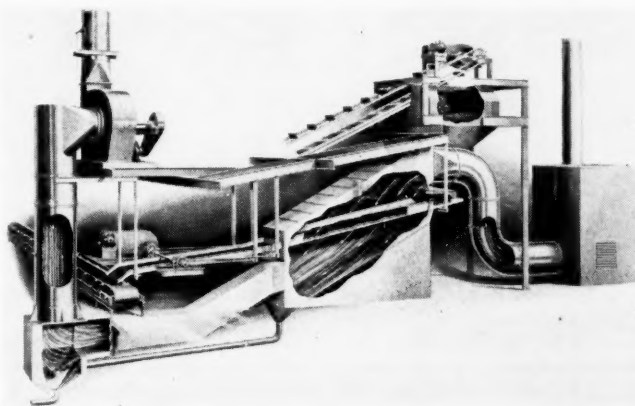
protector housed as a single unit, the assembly transforms power from the primary voltage to secondary grid voltage. Ratings are from 300 to 1,000 kva. on all standard voltages between 2,300 and 13,800, with secondary voltages of 125/216 four-wire, 226/460 four-wire and 460 three-wire.

Primary air-break switch opens the exciting current of the associated transformer and will withstand a short-circuit current of 10,000 amp. for two seconds without damage to or appreciable movement of its parts. The three-phase transformer is of the dry type, air-cooled and insulated with non-inflammable materials. It is designed to carry rated kva. at normal voltage and frequency without exceeding 75 deg. C. rise above an ambient temperature of 40 deg. C. High-voltage windings are delta-connected with four 2½ percent full-capacity taps below normal; low-voltage windings may be star- or delta-connected with no taps.

Network protector is the three-pole open type securely mounted in the low-voltage end of the unit housing and adequately spaced and barriered from all high-voltage circuits of the unit to permit inspection, test and maintenance without danger of contacting high-voltage portions.

STEEL BELT CONVEYOR

Sandvik Steel Works Co., Ltd., New York, offers the Sandvik steel belt for conveying coal, coke or other heavy materials. Said to have long and economical life because of great resistance to wear, low maintenance costs, simplicity of design and low power consumption, these belts are declared notable for the ease



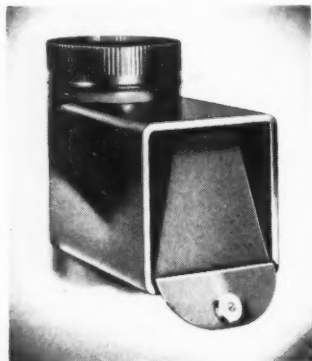
with which material can be discharged at any point along the conveyor run. Only simple scrapers are required that can be placed direct on the belt at a suitable angle. The scrapers can be arranged in such a manner that the material will be scraped off on one side only, or V-type scrapers can be used to scrape off material to both sides.

The belts are made of high-quality Swedish charcoal steel, cold rolled, hardened and tempered, in one-piece lengths of 350 to 500 ft. They are sufficiently resistant to corrosion for most applications, but, where required, belts can be furnished in stainless quality.

FIELD CONTROL

As a unit to assist in the conservation of such natural resources as coal and oil, the Field Control Division, H. D. Conkey & Co., Mendota, Ill., has developed Type K field barometric draft control for coal-burning stoves. This unit is built with 6-in. tee and a square 6-in. gate opening.

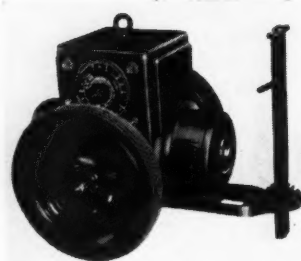
The K control as standard is set for one draft only—0.04



w.g.—but may be made up with other settings to suit the requirements of any manufacturer's stove or heating unit. These controls can be installed readily on either horizontal or vertical pipes. Also they can be used when a control is required to fit on a stove pipe running out from the heating unit at a low level or that must be run into a fireplace. They are rigidly constructed and long-lived.

TRAILER WELDER

A new two-wheeled lightweight pneumatic-tired trailer for mounting 200-, 300- and 400-amp. Hobart electric-drive welders is now offered by Hobart Brothers Co., Troy, Ohio. For road towing up to 35 miles per hour, this unit is so designed that mounting it is accomplished easily by means of three bolts

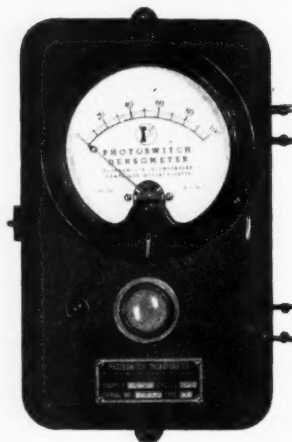


in the frame of the trailer which register with three holes in the legs of the welding machine. Combination tow bar and standing support has a hand-operated ratchet for locking the support arm in position.

The unit is easily moved by hand by virtue of its low under-slung construction, narrow tread and precision method of balancing. This all arc-welded steel trailer measures 54 in. long, 45 in. wide, 27 in. high (over tires); 13-in. axle center. Tires are 16-5.50, 4-ply.

SMOKE ALARM

Photoswitch, Inc., Cambridge, Mass., offers photoelectric smoke alarm Type A25C, which is said to increase combustion efficiency by indicating the degree of smoke density passing through the stack and signaling conditions of efficient combustion and excess smoke on green and red signal lights. The equipment includes photoelectric control, light source and indicator.



The photoelectric control and light source, mounted on opposite sides of the flue or stack, are aligned so that the light beam projects to the eye of the photoelectric control. The photoelectric control is wired to Densometer D4, which may be located at any point in the power plant for observation by the engineer. The Densometer meter gives a continuous indication of the smoke density. A small green light sig-

nals efficient combustion and a large red bullseye indicates when excessive smoke is passing through the stack.

SHOP TRUCK

Buda Co., Harvey, Ill., announces the development of a new $\frac{1}{2}$ -ton industrial shop truck known as the Buda Chore Boy. Weighing only 800 lb., it is said to be fast, with quick acceleration foot-throttle speed control. It handles easily at all speeds, being driven by a powerful low-maintenance 4-cycle air-cooled 7.7-hp. engine.



The load capacity is 1,000 lb., and it has a loading space of 12.8 sq. ft. The frame is of electrically welded steel with anti-skid steel deck and a heavy-gage sheet-metal engine housing. Only 37 in. in width, the three-wheel construction permits turning in a radius of 7 ft. 3 in.

CAR SPOTTER

Fridy Hoist & Machinery Co., Mountville, Pa., offers a new and improved type of car spotter. It is built on the Junior 10-hp. motor rating for handling 250 tons haul on a slight grade at 50 f.p.m. and furnished with an oversize vertical capstan of 10 in. diameter by 13 in. face. The complete unit is of the inclosed type with all of the operating parts protected when installed in the open.

The complete unit is mounted on a steel sub-base and with a metal housing over the motor drive, the top of which can be removed for oiling and adjustments. According to the manufacturer, this type of car spotter is the outgrowth of over 20 years' experience in the building of this class of equipment.

MINE CAR

A new type of mine car designed to meet the present emergency demand for equipment that will stand up better in either single- or double-turn service is offered by the Bethlehem Steel Co., Bethlehem, Pa.

The car has a spring buff and draft at each end connected by a floating draw bar that runs the length of the car; also dual spring drafts outside instead of inside. The body is of Mayari R steel, with stub-axle construction and anti-friction wheel bearings.

The maker points out that no matter in which direction the car travels the pull always is transmitted through the floating draw bar to the springs at the rear; thus the rear springs are the ones compressed, there be no pull on the front end at any time. Hence the tendency is to push the car from the rear instead of pulling it from the front, which tends to hold the car together rather than pull it apart.

RAIL-BOND TESTER

A new two-in-one instrument for testing efficiency of rail bonding in coal-mine track systems has been introduced by the Mosebach Electric & Supply Co., Pittsburgh, Pa. In addition to determining power losses through rail bonds the instrument is said to enable operators to ascertain voltage decreases at any point in the line. Operation is simple and is accomplished by one man.

It is, of course, important to keep voltage high at the face, for the following reasons: Machinery operates at maximum efficiency at proper voltage; lower voltage means high amperage, increasing power costs and decreasing efficiency; low voltage roasts, or burns out, armature windings on equipment.



By permitting operators constantly to check efficiency by bonding and power lines, the Mosebach rail-bond tester and voltmeter is designed to minimize difficulties resulting from inefficient joining. Size of the instrument is approximately 8x6x4½ in. and weight is only 3½ lb.

Koehler Mfg. Co.
BRANCH & INTER-OFFICE CORRESPONDENCE

DATE APR. 6, 1942
FROM KCP:M
OFFICE Marlboro

TO ALL MINE LAMP SALES DEPARTMENTS
DELIVERIES AND PRIORITIES
REF. (Wire)
SUBJECT Wheat Cap Lamps; Koehler Flame Safety Lamps; and Parts

The War Production Board, realizing the importance of the mining industry to our country's all-out War Effort, has granted us the priorities necessary to fill your orders promptly.

Therefore, despite any rumors to the contrary, we are prepared to continue prompt deliveries on all your orders, in accordance with the wishes and regulations of the War Production Board.

As in the past, there will be no interruption in our efficient service and prompt deliveries to maintain safe and adequate underground lighting.

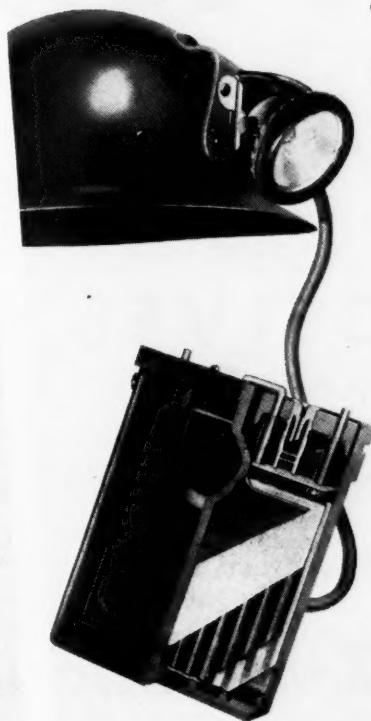
To do our part in the present crisis is both a privilege and a great responsibility. To this end, all the resources and facilities of this company are pledged -- until Victory!

K. Z. Powning.

WHEAT

The Engineered Cap Lamp

Here are the features . . . judge for yourself!



- 1 Two bulbs (one for emergencies) — miner is never in the dark.
- 2 Center mounted, Krypton-filled bulb, gives 20% more light — no dark "shadow spot" in beam.
- 3 Choice of 3 reflectors gives narrow concentrated beam, a medium beam, or a widespread beam of light — suits all working conditions.
- 4 Headpiece weighs less than 6 ounces, Lamp Cord 6 ounces, Battery 62 ounces — Total weight of Lamp complete 74 ounces.
- 5 Headpiece molded of strong bakelite; sealed, moisture-proof and dust-proof.
- 6 Rubber battery case — non-conductor of electricity — a valuable safety feature.
- 7 Battery solution (free) limited to one ounce total both cells.
- 8 Lead-acid type battery maintains high voltage throughout shift (80+ % efficiency) — year after year.
- 9 Battery charged through headpiece and cord of cap lamp — a daily test of all connections.
- 10 Designed for self-service charging system for lowest lamp-house operating cost.
- 11 To charge, headpiece is simply slipped on to key in charging rack, and turned to make contact. Nothing to take apart — unit-sealed construction.
- 12 A payment plan (purchase or rental) to meet the requirements of companies — large and small.

Note — More New Wheat Cap Lamps were installed in the U.S.A. during 1940-1941 than in any previous 2-year period

Write today —
WHEAT LAMP SALES, INC.
1501 Kanawha Valley Bldg., Charleston, W. Va.

SPECIALISTS IN MINE
LIGHTING FOR 25 YEARS
KOEHLER MFG. CO.
Marlboro . . . Mass.



3

COAL MINING JOBS YOU CAN DO BETTER

with du Pont

EXPLOSIVES

and Blasting Accessories

“VENTUBE”*

Ventilating Duct

Chromated Zinc Chloride

Treated Ties and Timber

1

2

3

INC
BLAS
— th
out t
Coal
(1)
actio
mech
(3)
the
expl
big,
tons
“Lun
qual
“all
du I
and

VEN
ope
inst
usin
face
velo
any
“Ve
rib
cal
inst
roch
Try
ing
spe
glac

TIE
Min
usu
ord
tim
dec
Tre
tra
Wr
Mi

INCREASED PRODUCTION THROUGH BETTER BLASTING —

"Speed production and hold down costs" — that's the order of the day in coal operations throughout the country and it's the kind of a job "Du Pont Lump Coal C"† does best. Consider these four big advantages: (1) "Lump Coal C," because of its ultra-slow heaving action, rolls the coal forward, *away from the face*, so that mechanical loaders get it easily. (2) It shears ribs clean. (3) Its great spreading action frequently cuts down on the number of drill holes per face — saving time and explosives, and (4) "Lump Coal C" pulls a maximum of big, solid lump — the kind that enables you to load more tons per shift.

"Lump Coal C" is the answer to higher speed, higher quality coal production, at lower costs. If you're after "all out" production, it will pay you to consult your du Pont representative today. He has the permissibles and the experience to help you do the job. †Reg. U.S. Pat. Off.



LUMP COAL C permissible explosive

VENTILATION THAT'S RAPID AND SAFE —

Continuous operation is the most essential factor in any conveyor installation. That's why more and more operators are using "Ventube" for increased efficiency through clearing face immediately after shooting. It assures the necessary velocity of air required, which cannot be obtained with any other means of clearing face.

"Ventube" is easy to handle and can be kept close to the rib where it will not interfere with operation of mechanical equipment or be torn down. It is easy to remove and install in new working places. It is resistant to flying rock and coal.

Try a few sections of "Ventube" in your toughest working. See how efficiently it works — how it helps you speed-up work and cut costs. Facts and figures will gladly be sent on request.



VENTUBE ventilating duct

TIES AND TIMBER THAT CUT COSTS, AVOID DELAYS —

Mine ties treated with "Chromated Zinc Chloride" usually last for fifteen years instead of only two for ordinary wood. CZC makes the difference. Ties and timber treated with this preservative are resistant to decay, fire retardant, clean, odorless and safe to handle. Treated timber cuts costs, avoids delays to haulage-way traffic, reduces accidents, helps you speed production. Write today for your copy of "Wood Preservation for Mines" and for location of the nearest treaters.



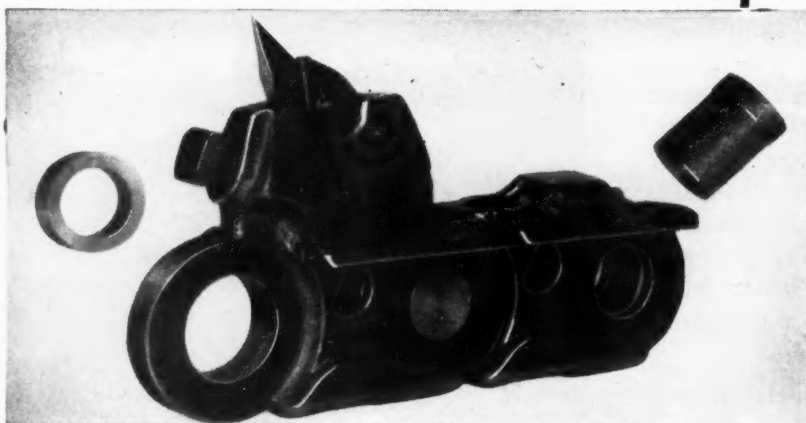
CZC treated timber

*"Ventube" is Du Pont's registered trademark for its rubber impregnated flexible ventilating duct.



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

Wilmington, Delaware



GENERAL JIM SLIM SAYS:

**"LET'S GET TOGETHER
AND MAP OUT A PLAN
COVERING YOUR**

*Future
Requirements*

FOR OUR SERVICES . . .

**. . . THE BOWDIL
CUTTER BAR, CHAIN
AND ME"**

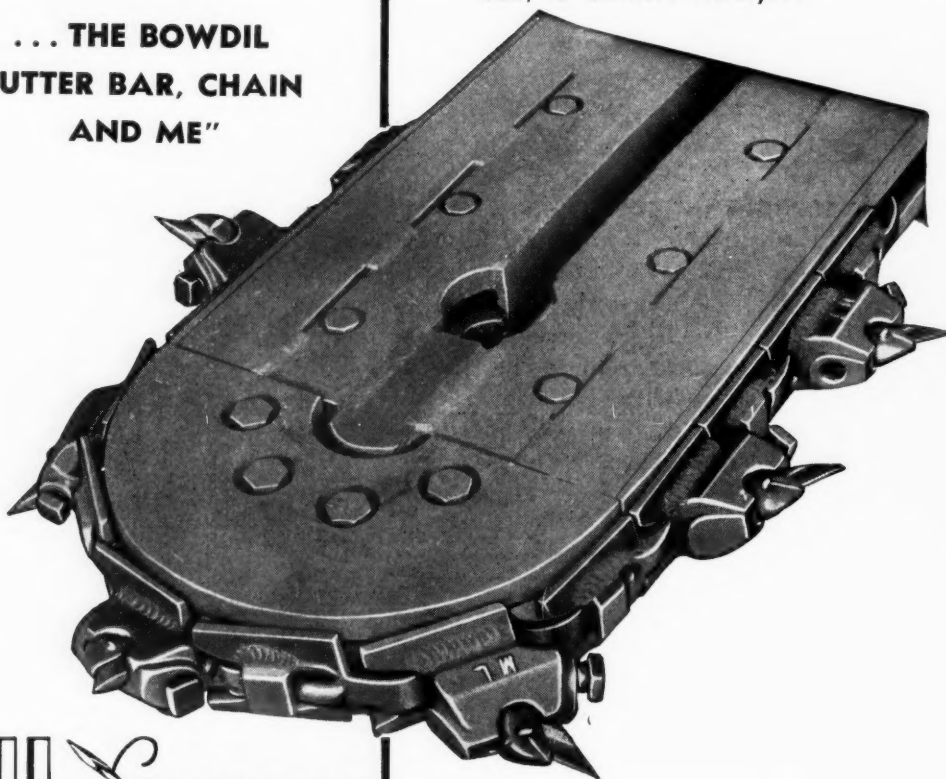


Planning ahead for future production needs is the best assurance of a steady, ever-increasing flow of coal from your operations to the industries you serve. In this respect, we urge you to estimate your requirements of BOWDIL products for 1942 and 1943. With your future needs known, BOWDIL can intelligently plan its own production so as to be able to meet your needs at any advanced date. This forward planning, too, can speed better BOWDIL items to you when and as you want them, in any practical quantity.

A word about these products, the usefulness and savings they have brought to mines all over the country. The BOWDIL Bar is newly designed . . . Z-Bar construction, plus reinforcing at stress points, gives rigidity . . . eliminates kinking. The BOWDIL Chain has been rebuilt, too . . . it provides a greater factor of cutting efficiency, as well as longer life! The BOWDIL Bit . . . always dependable . . . offers you three to five times greater active service, with coarser cuttings as well.

Working as a team, this trio of production-increasing items equip you to bring highest economies to all phases of coal cutting operations.

So, get in touch with BOWDIL at once, whether you are now a user of BOWDIL products, or whether you have yet to experience their time-tested value. Let us know your needs (probable replacement parts, too), so that we can shape our production accordingly, and work with you best, to ultimate victory!!!

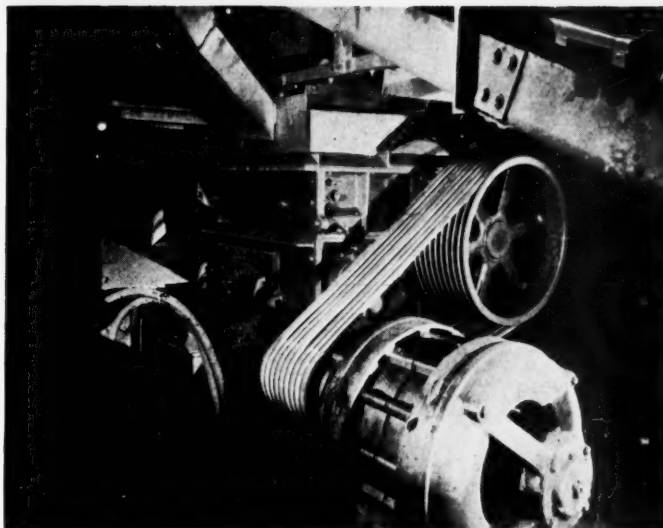


The BOWDIL Company
Canton COAL CUTTING EQUIPMENT Ohio

How we can be of **GREATEST HELP TO YOU** *in serving your CRUSHING NEEDS...*

All of us today are aware of the greatest all-time production effort being made by industry and the vital part coal output is playing in the American Victory Program.

Therefore, we believe that to be of greatest help to the mining industry we should have as complete a picture as possible of immediate and anticipated crushing equipment needs. This will be a well directed step by both you and ourselves as a cooperative effort with Uncle Sam.



Patented reversible
manganese steel
SHREDDER RINGS



(PATENTED)

**Revolving at
a Slow Speed
Make a Mini-
mum of Fines**

These rings split the coal rather than crush it. The rings are designed to maintain their outward position by centrifugal force at a slow speed. No toggles or cams are employed—when encountering non-crushable material the rings are free to swing back on their shafts—this means protection against injury from tramp metal. This patented SHREDDER RING is found only in the American Rolling Ring Crusher.

The American Rolling Ring Crusher is built in many sizes and although they have the same outward appearance, every unit is built especially to meet the particular requirements of each application. Modifications as needed are applied to make them highly efficient for the specific job. They are compact, externally adjusted, easily accessible, and powerful.

To be ready and able to serve you efficiently we should like to have such information from you as follows:

1. What is largest lump size which you will feed crusher.
2. At what rate (tph) would you contemplate crushing.
3. What stoker sizes do you supply?
4. How soon will you require an AMERICAN Crusher?

If you will write us now giving us the above details together with any other information you may wish us to have, you will help materially in aiding us to arrange our production schedules for a most prompt service.

**Use the AMERICAN Rolling
Ring Crusher for**

- greater range of reduction
- uniformity of sizes
- crushing at less than one cent per ton
- extreme simplicity of operation

AMERICAN PULVERIZER COMPANY 1119 MACKLIND AVENUE
ST. LOUIS, MISSOURI
ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS



Make This Simple Test
It Will Show You **A REAL SAVING**
in Belt Costs!



As a V-belt bends, you can actually feel its sides change shape! The top of the belt is under tension and grows narrower (see Figure 1, at right). The bottom is under pressure—therefore it widens. These stresses force a straight-sided V-belt to bulge in the sheave groove (Fig. 1), and this produces uneven wear on the belt sides, resulting in shorter life!

Now look at Figure 2. There you see how the concave side of the Gates Vulco Rope exactly corrects this bulging. It insures a perfect fit in the sheave groove with uniform side-wall wear and, therefore, longer life! It insures that the entire side-wall grips the pulley—heavier loads are carried without slippage—belts are saved and power consumption reduced.

Only belts built by Gates are built with the Concave side, which is a Gates patent.

**What Happens
 When a
 V-Belt Bends**



FIG. 1



FIG. 2

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

Chicago, Ill.
 549 West Washington

New York City
 215-219 Fourth Avenue

Birmingham, Ala.
 405 Liberty National Life Bldg.

Los Angeles, Cal.
 2240 East Washington Blvd.

Denver, Colo.
 999 South Broadway

Dallas, Tex.
 2213 Griffin Street

Portland, Ore.
 333 N. W. 5th Avenue

San Francisco, Cal.
 2700 16th Street



WHEN MORE EFFECTIVE LIGHT



INSURES GREATER SAFETY

PRODUCTION TAKES AN UPWARD CURVE!



THIS year, with mining production climbing ever-faster under the stern stimulus of war, you'll find an interesting parallel between increased tonnage and the use of the Edison Lamp. Clearly shown in the higher output and lower accident rates of progressive operations are the advantages of *more effective light*, greater dependability and complete safety of the Edison Electric Cap Lamp—plus M.S.A. Skullgard's time-proved head protection and comfort. Good miners are better miners with these famous products . . . *better for themselves, and mining management, too!* Demonstrations on request.

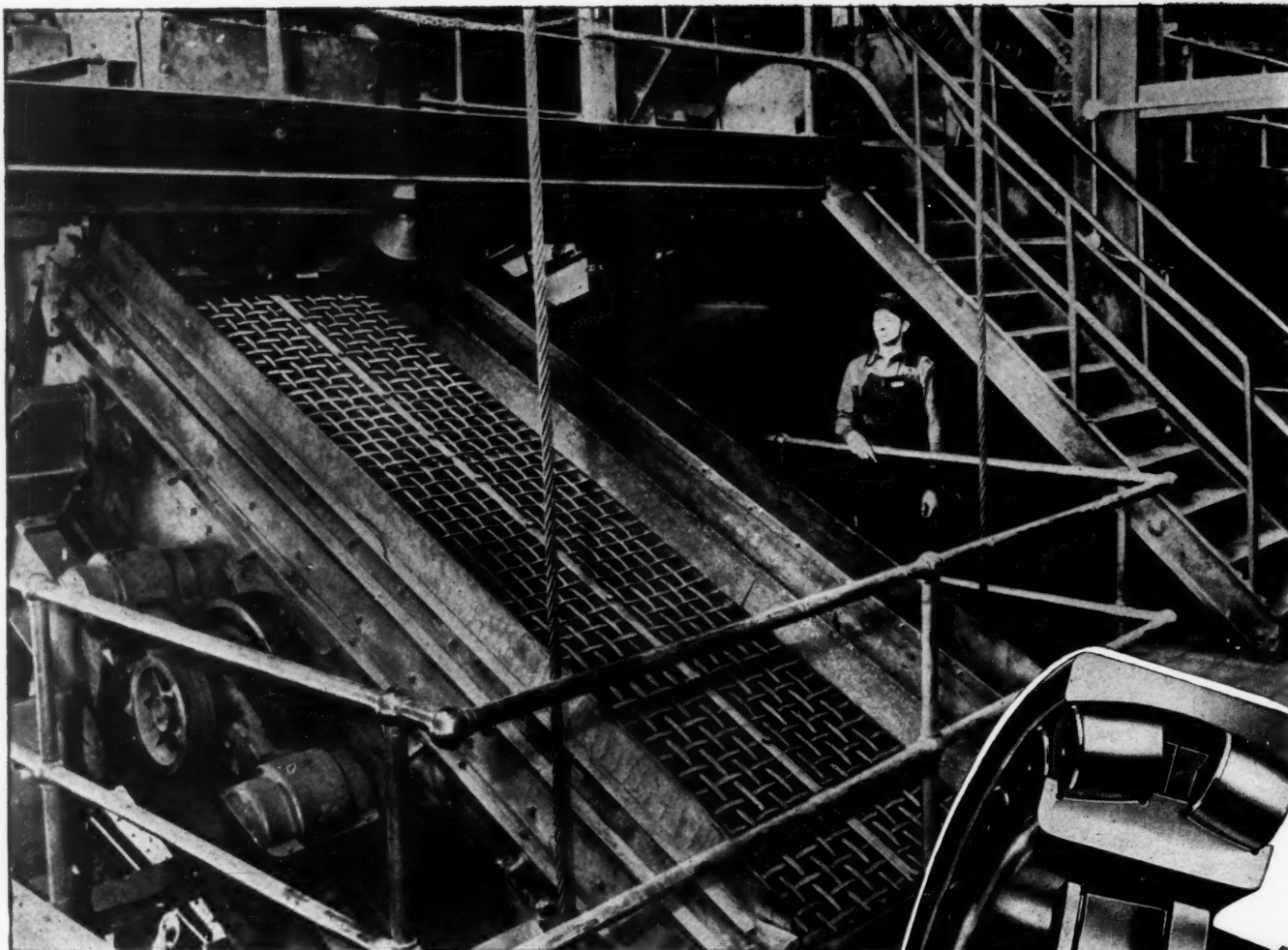
Edison
ELECTRIC
CAP LAMPS



MINE SAFETY APPLIANCES COMPANY

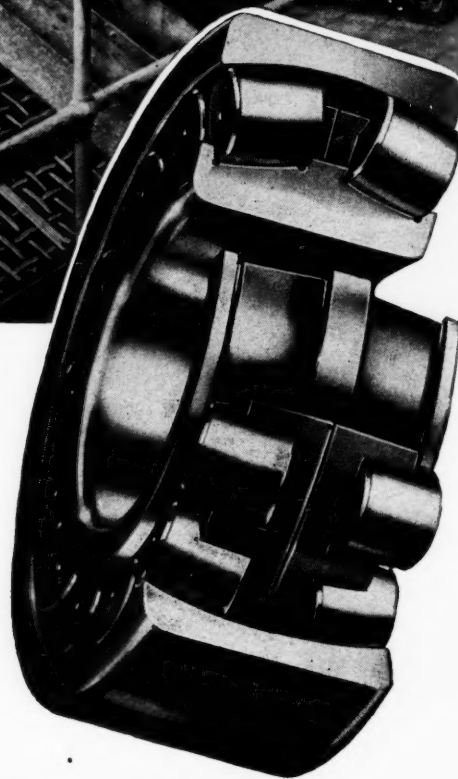
BRADDOCK, THOMAS AND MEADE STREETS, PITTSBURGH, PA. . . DISTRICT REPRESENTATIVES IN PRINCIPAL CITIES

M. S. A. Products Include: Breathing Apparatus . . . Inhalators . . . Approved Dust Respirators . . . Masks of all types . . . Gas Indicators . . . Gas Detectors . . . Safety Goggles . . . Protective Hats and Caps . . . Edison Electric Cap Lamps . . . Safety Belts . . . Safety Clothing . . . Dust Instruments . . . First Aid Equipment. Descriptive Bulletins will be sent on request.



• Type F-900 Ty-Rock Screen built by W. S. Tyler Co.

“All out”



WITH SKF-EQUIPPED SCREENS

As the war goes on, materials must move on continuously. It's "all out" production now, and bearing failures cannot be tolerated. On this Type F-900 Ty-Rock Screen, coal is sized day after day without bearings falling down on the job, for SKF Bearings on both eccentric and main locations

are designed to withstand heavy dynamic and static loads and to compensate for shaft deflections, distortions or weave. Every SKF-equipped machine is on the job these days—and will remain on the job long after the present production crisis has passed.

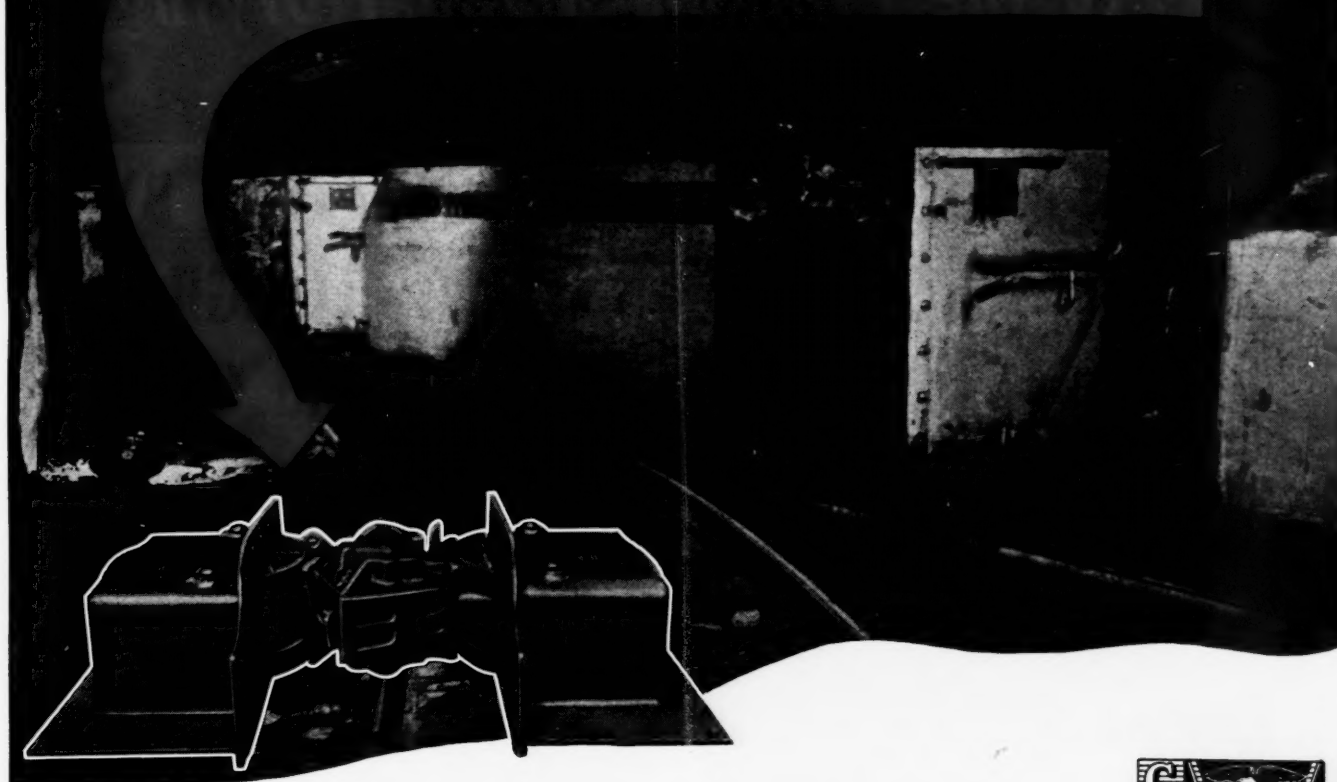
1927

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA., PA.



ROLLER **SKF** BEARINGS

KEEP 'EM ROLLING WITH Willison AUTOMATIC COUPLERS



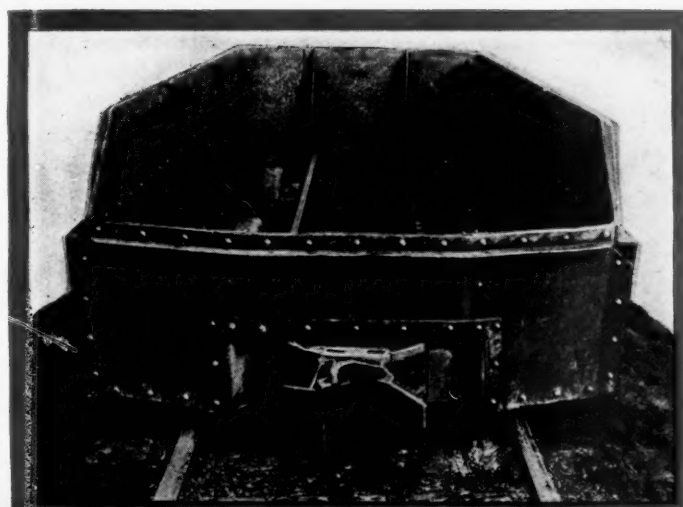
The WILLISON Mine Car Coupler has been designed to provide AUTOMATIC coupling of mine cars, and to speed up the hauling and dumping operations to keep pace with modern mechanized mining methods.



Thru 10 years of service in mechanized mines Willison Automatic Couplers have shown—increased production—lower operating costs—reduction of maintenance cost—and fewer accidents.

Willison Couplers allow rotary dumping of cars in train without uncoupling.

Furnished with either spring or friction draft gear for any type of car.



NATIONAL MALLEABLE AND STEEL CASTINGS CO.

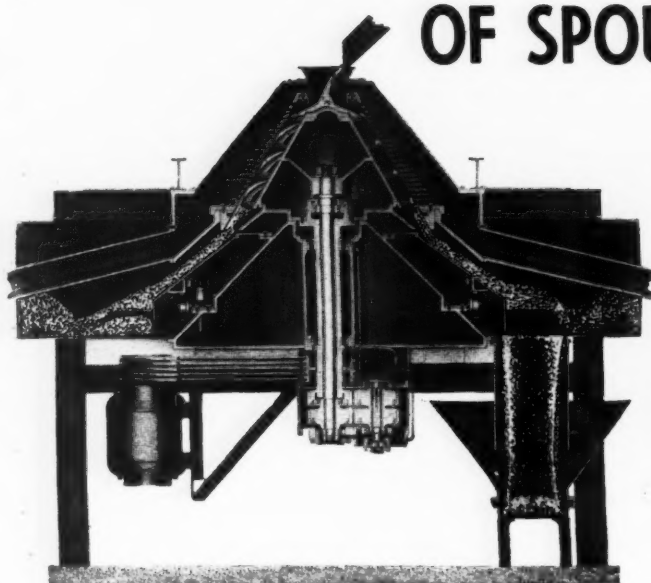
Genl.

Sale Office
W. H. H. H.

THE ECONOMICAL SOLUTION

*to the Problem of Coal Drying
without the Use of Heat*

TO SPEED UP DELIVERY OF COAL BY
PREVENTING TIME LOST BY CLOGGING
OF SPOUTS, BINS and CARS



THE

"C-M-I"

Continuous Centrifugal

DRYER

MODERN DESIGN FOR UPKEEP—

DEPENDABLE PERFORMANCE—

PROVEN IN SERVICE

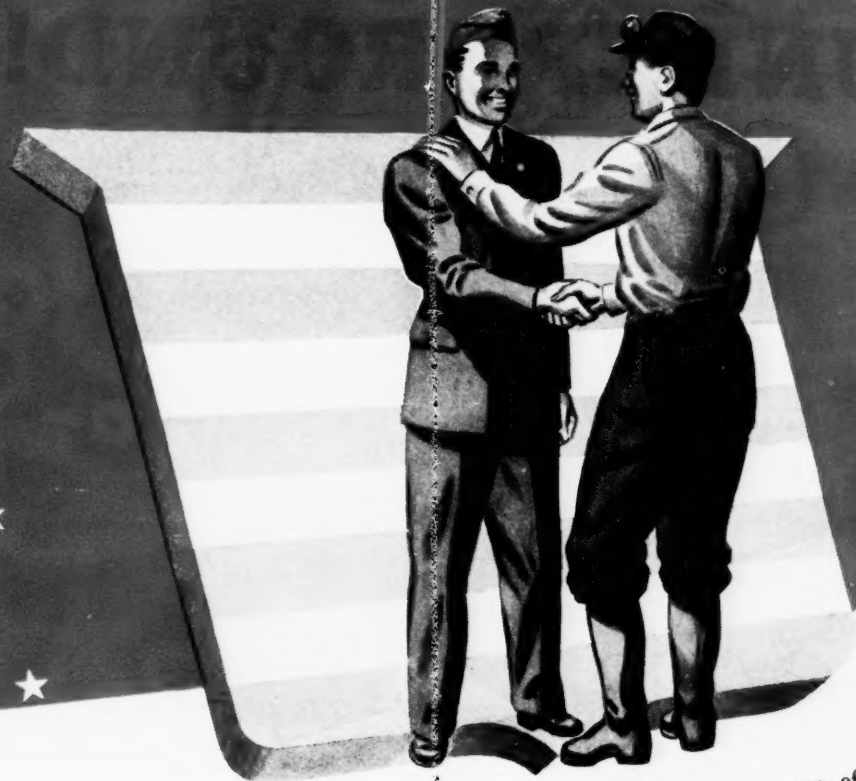
**LOW INSTALLED COST
LOWEST OPERATING COST PER TON
OF DRIED COAL**

CENTRIFUGAL AND MECHANICAL INDUSTRIES, INC.

SECOND AND PRESIDENT STREETS

ST. LOUIS, MO.

We'll back you up, *Buddy*



★ **COAL IS VITAL TO VICTORY!** In America's all-out war effort, the Coal Mining Industry and the explosives manufacturer are giving their utmost to assure ultimate Victory. In addition to our full co-operation with the Government, the King Powder Company will continue to serve the Coal Mining Industry with their explosives requirements.

KING RED CROWN PERMISSIBLE

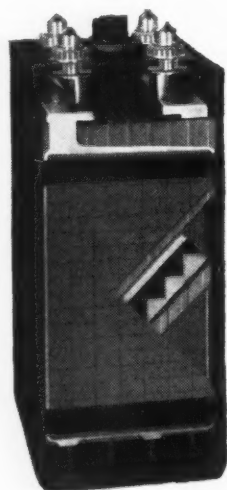
This unique, surface sensitized, granular, Class A Permissible has been steadily growing in favor, as shown by its acceptance in an ever-increasing number of mines. It obtains results similar to black powder because of its slow, heaving action. It is in cartridge form for your convenience, and is easier on the roof. Red Crown produces a minimum of smoke and fumes, because it contains no nitroglycerin . . . a distinct advantage in mechanized mining. A greater tonnage of coal, per pound of explosive, has resulted in practically all instances where Red Crown has been adopted.

King Red Crown has proved its ability to produce efficiently the kind of coal wanted, at lower cost. It can do the same for you in your particular seam. Let us prove it!

**COMPLETE EXPLOSIVE REQUIREMENTS
FOR THE COAL MINING INDUSTRY**

THE KING POWDER CO. INC.
CINCINNATI, OHIO
INCORPORATED 1878

Mechanized Warfare Starts **UNDERGROUND!**



GOULD KATHANODE is designed especially for powering mechanized mining equipment. Leading mechanized operators rely on Gould's Spun Glass construction to provide long life and high capacity at low operating cost.

THE ANSWER to Hitler's blitz is found in mechanized troops. The answer to coal's battle of production is found in mechanized mining equipment, such as this Joy Shuttle car. Today's need is to move more tons per man per day. Mechanized mining gives you the means to do it. You'll get low-cost operation as well as speed if your shuttle cars and locomotives are Gould-equipped. Goulds require a minimum of servicing, they run longer between charges, they are longer lived. Write for descriptive literature. Gould Storage Battery Corporation, Depew, New York.

★ ★

SEE YOU IN CINCINNATI! *When you attend the American Mining Congress, visit Gould headquarters at the Netherland-Plaza.*

GOULD

THE BATTERY PICKED BY ENGINEERS

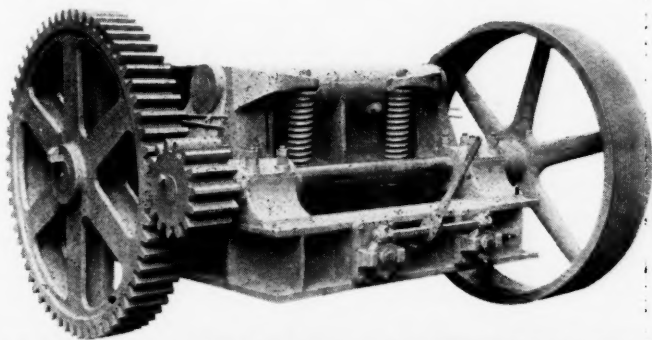
McLANAHAN BOTTLENECK BREAKERS

Get ready now for the constantly increasing demand for stoker and other prepared sizes of coal.

See below the many types of crushers for any capacity or products. Semi-steel or fabricated steel construction, babbitt, bronze or roller bearings.

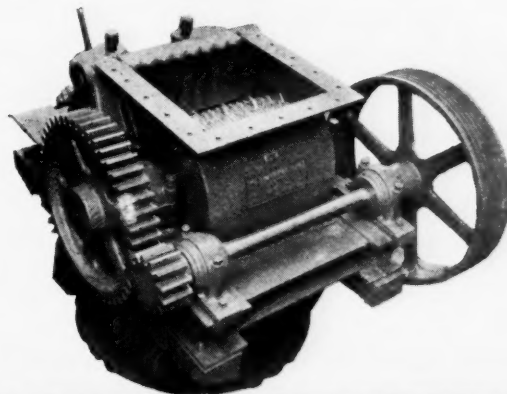
Patented solid or segment rolls for different sizing problems. With or without automatic tramp iron protection. Easily and quickly adjustable. Mechanically and efficiently ideal.

Write for recommendations and prices.



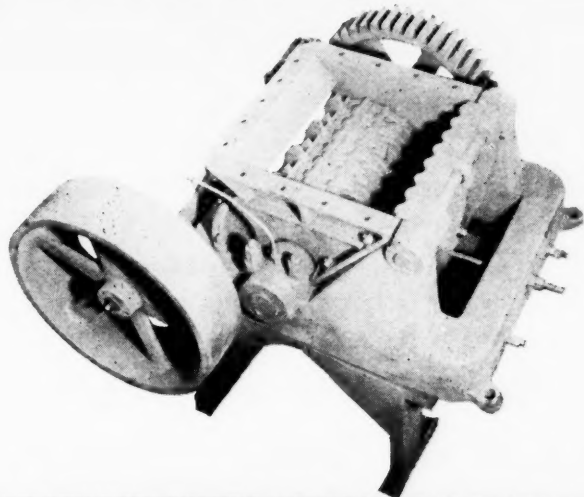
GIANT ROCK MASTER

An all steel, automatic steel strut crusher. in any size or capacity for handling rock and mine refuse.



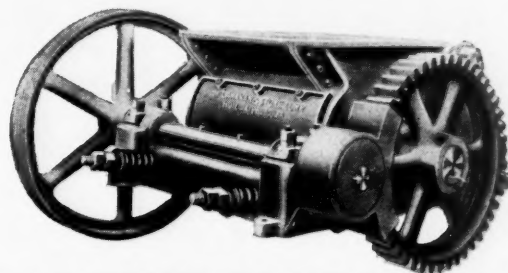
ROLLER BEARING BLACK DIAMOND CRUSHER

An all steel, roller bearing equipped unit, with quick adjustment control and automatic steel and scrap iron protection. Install it where headroom is limited.



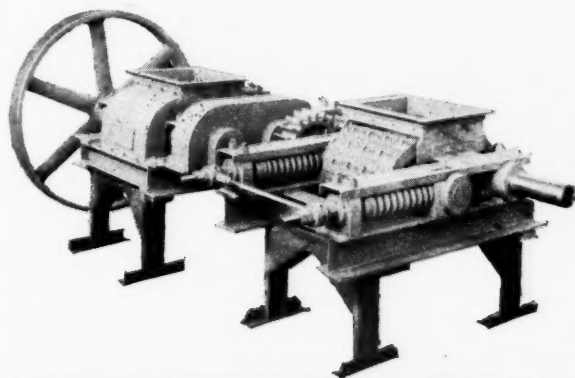
BANTAM BUSTER CRUSHER

The new Bantam Buster—a low price unit especially designed for use at truck mines and low capacity operations.



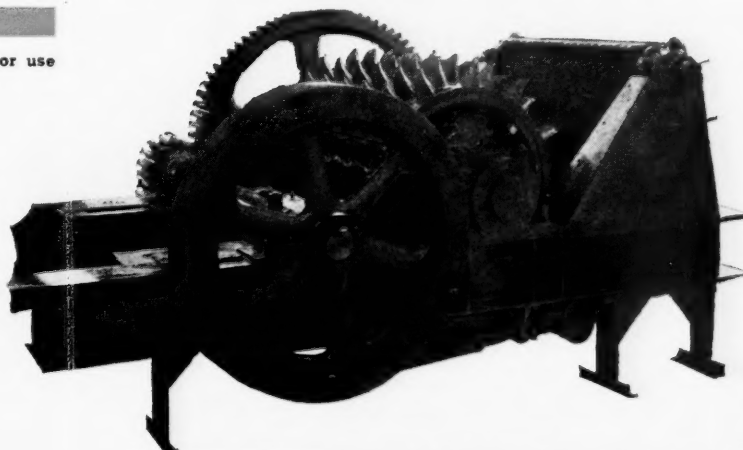
CONVENTIONAL TYPE CRUSHER

The low cost, conventional type of Black Diamond Single Bolt Adjustment Crusher built in a one-piece frame. Adjustment is made by means of spring rods. Protection against tramp iron is provided by springs and shear pins in the pulley.



DOUBLE ROLL CRUSHER

Built with a rugged, heavy, all-steel frame. Tramp iron protection and easy adjustment.



STEEL STRUT CRUSHER

A steel strut primary crusher, 48" x 60" (Side and hopper plates removed) . . . for cracking large lumps with a minimum of fines. Used extensively throughout the anthracite and bituminous fields.

McLanahan and Stone Corporation, Hollidaysburg, Pa.
ORIGINATORS OF SINGLE ROLL CRUSHERS

BUYING HELP . . . to Speed Your Victory

Production Planning!

Now . . . More than ever before—You'll find COAL MINING CATALOGS Speed your Planning and Buying!

The new high priority rating insures mining men the equipment and materials they need. But they *must* plan their needs ahead so that manufacturers can work with WPB's Mining Branch to secure the necessary raw materials and repair parts.

And with every effort bent towards VICTORY, greater production and more efficient use of men and machines, speed-up of purchasing is highly important. COAL MINING CATALOGS 1941 Edition—in new sectionalized form, and with 40% more catalog information—is one handy reference, simplifies and speeds your buying!

NOTE THIS "ROLL CALL" OF CATALOGERS

The 1941 COAL MINING CATALOGS had 40% more BUYING information than the 1940 Edition. These companies are giving Mining Men the added buying information they request.

SECTION I—PROSPECTING, EXPLORATION, DEVELOPMENT, ENGINEERING OFFICE EQUIPMENT

Dravo Corp.
Hoffman Bros. Drilling Co.
Johnson Co., R. G.
Mott Core Drilling Co.
Pennsylvania Drilling Co.

SECTION II — CUTTING, DRILLING, SHOOTING AND STRIPPING

Black & Decker Mfg. Co.
Bowditch Co.
Central Mine Equipment Co.
Chicago Pneumatic Tool Co.
Cincinnati Electrical Tool Co.
Cincinnati Mine Machinery Co.
Dooley Bros.
du Pont de Nemours & Co., E. I.
Ingersoll-Rand Co.
Jeffrey Mfg. Co.
National Powder Co.
Salem Tool Co.
Schramm, Inc.
Sullivan Machinery Co.

SECTION III — LOADING, TRANSPORTATION, DUMPING, HOISTING

American Cable Div., Amer. Chain & Cable Co.
American Mine Door Co.
American Steel & Wire Co.
Atlas Car & Mfg. Co.
Bethlehem Steel Co.
Barber-Greene Co.
Brown-Fayro Co.
Carnegie-Illinois Steel Corp.
Connellsville Mfg. & Mine Supply Co.
Edison Storage Battery Div. of Thomas A. Edison, Inc.
Enterprise Wheel & Car Corp.
Electric Storage Battery Co.
Fridy Hoist & Machinery Co.
Hazard Wire Rope Div., Amer. Chain & Cable Co.
Indiana Foundry Co.
Interstate Equipment Co.
Irwin Foundry & Mine Car Co.
Jeffrey Manufacturing Co.
Joy Manufacturing Co.
Kanawha Manufacturing Co.
La-Del Conveyor & Mfg. Co.
Leschen & Sons Rope Co., A.
Lidgerwood Mfg. Co.
Lobdell Car Wheel Co.
MacWhyte Co.
Metal & Thermit Corp.
Mining Safety Device Co.
Myers-Whaley Co.
Norma-Hoffman Bearings Corp.
National Malleable & Steel Castings Co.
Penn Machine Co.
Parkersburg Rig & Reel Co.
Pittsburgh Knife & Forge Co.
Pressed Steel Car Co.
Roebbing's Sons Co., John A.

SECTION IV—TIMBERING VENTILATION AND MINE DRAINAGE

American Hard Rubber Co.
American Brattice Cloth Co.
Barrett, Haentiens & Co.
Brown-Fayro Co.
Carbolineum Wood Preserving Co.

Deming Co.
Duff-Norton Mfg. Co.
du Pont de Nemours & Co., E. I.
(Fabrikoid Div.)
Flocker & Co., John
Frederick Iron & Steel Co.
Gorman-Rupp Co.
Goyne Steam Pump Co.
Jeffrey Mfg. Co.
LaBour Co.
Markham Products Co.
Wyckoff & Sons Co., A.

SECTION V—PREPARATION

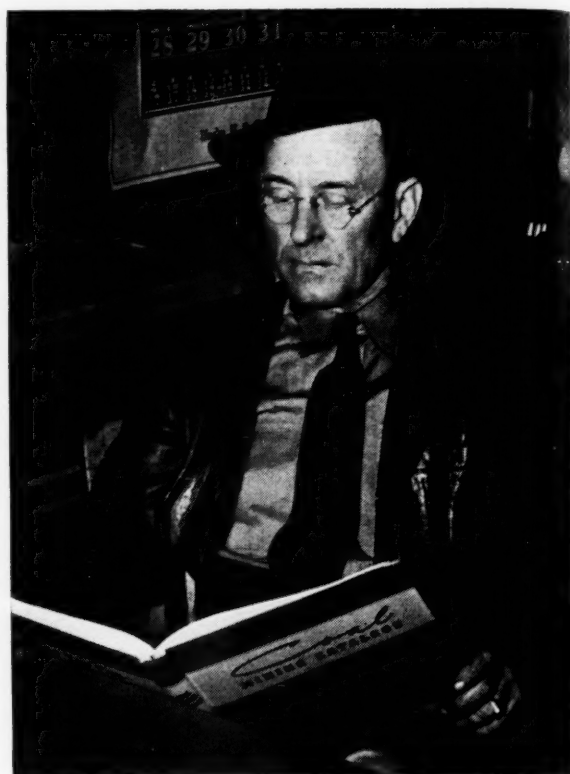
Abbe Engineering Co.
Allis-Chalmers Mfg. Co.
American Pulverizer Co.
Bixby-Zimmer Engineering Co.
Brown-Fayro Co.
Centrifugal & Mechanical Industries
Deister Concentrator Co.
Deister Machine Co.
du Pont de Nemours & Co., E. I.
(R&H Chemicals Dept.)
Dings Magnetic Separator Co.
Fairmont Machinery Co.
Jeffrey Mfg. Co.
Kanawha Mfg. Co.
Koppers Co.
McLanahan Stone Corp.
Merrick Scale Mfg. Co.
Nordberg Mfg. Co.
Pennsylvania Crusher Co.
Productive Equipment Corp.
Robins Conveying Belt Co.
Screen Equipment Co.
Tyler Co., W. S.
Universal Vibrating Screen Co.
Viking Mfg. Co.
Wedge Wire Corp.

SECTION VI — POWER (GENERATION AND DISTRIBUTION)

Babcock & Wilcox Co.
Caldwell Co., W. E.
Falk Corp.
Garlock Packing Co.
General Electric Co.
Hazard Insulated Wire Works
Keystone Carbon Co.
Mines Equipment Co.
Ohio Carbon Co.
Rockbestos Products Corp.
Spray Engineering Co.
Superior Carbon Products, Inc.
Westinghouse Electric & Mfg. Co.
Worthington Pump & Machinery Corp.

SECTION VII—SUPPLIES, MAINTENANCE, SAFETY, CONSTRUCTION

Atlantic Refining Co.
Black Diamond Spad Co.
Bristol Co.
Duraloy Co.
Edelblute Mfg. Co.
Gibraltar Equipment & Mfg. Co.
Hauck Mfg. Co.
Hauser-Stander Tank Co.
Johns-Manville
Jones & Laughlin Steel Co.
Laughlin Co., Thomas
Mica Insulator Co.
Ruberoid Co.
Shawinigan Products Corp.



"We use COAL MINING CATALOGS quite often. Besides this office copy we keep another in the mine repair shop."

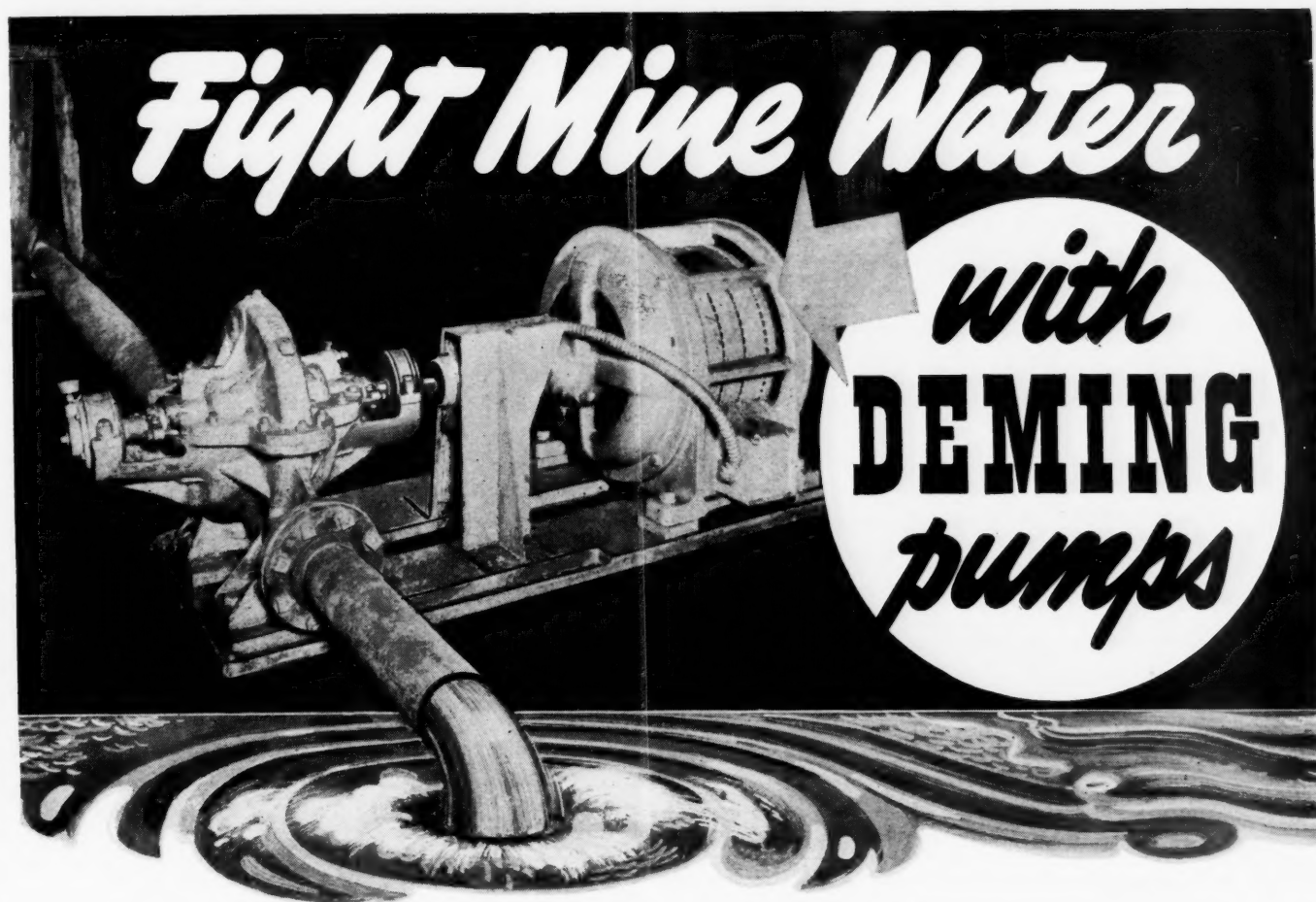
Says . . . Mr. George Stevens, Owner,
Moore Branch Coal Co., Hitchens, Ky.

We'll Gladly Send You A Copy

If you are responsible for the specifying, requisitioning, or buying at your mechanized property, and you haven't received your copy of the new 1941 Edition of COAL MINING CATALOGS, write us on your letterhead, telling us about your property. We'll shoot you a copy right away!

**WHEN YOU'RE BUYING . . .
Look for it First in Coal Mining Catalogs!**





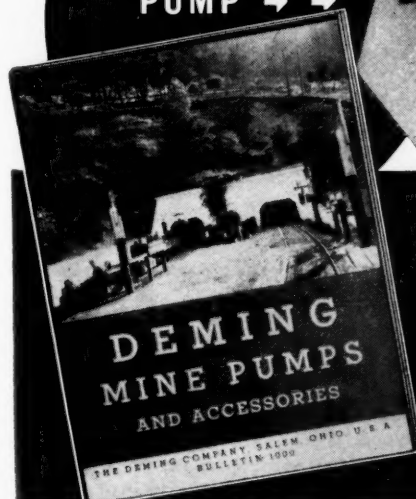
MINE WATER IS A FIFTH COLUMNIST. It takes FIGHTING PUMPS to keep it out! Deming Mine Pumps are built to do that job—thoroughly, economically, and dependably.

An example is the Deming Pump illustrated. It's a heavy duty, hard-boiled fighter, tough as a U. S. Marine in action. Its job is to handle mine drainage water of high acid content.

To do that job with unfailing performance, this particular pump has a bronze casing and chrome impellers. Corrosion resisting pipe is used to cooperate with the acid resisting pump.

YOUR particular mine dewatering needs may not call for as tough a fighter as that pump. But somewhere in the Deming line is *the right pump for YOUR specific needs.*

SEND FOR THIS
FREE GUIDE
TO THE RIGHT
PUMP → →



Here's what the FREE Guide covers:

Bulletin 1000 contains large illustrations of various types of Deming Mine Pumps, sectional views showing features of construction, performance tables on all types and sizes of pumps, technical data, detailed information about accessories and other helpful data. Send for FREE copy of Bulletin 1000.

Use this convenient form for quick action!

THE DEMING COMPANY • SALEM, OHIO

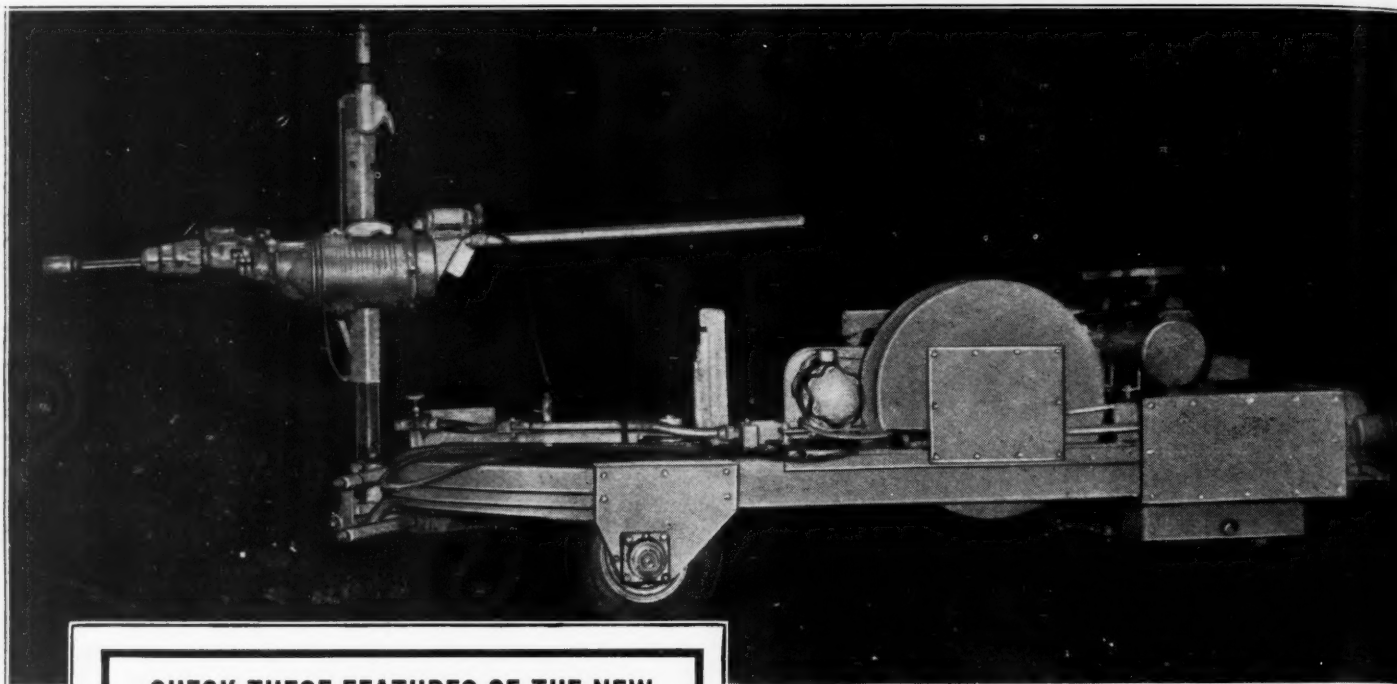
★ Send me a copy of FREE Bulletin 1000.

NAME _____

ADDRESS _____

CA-4

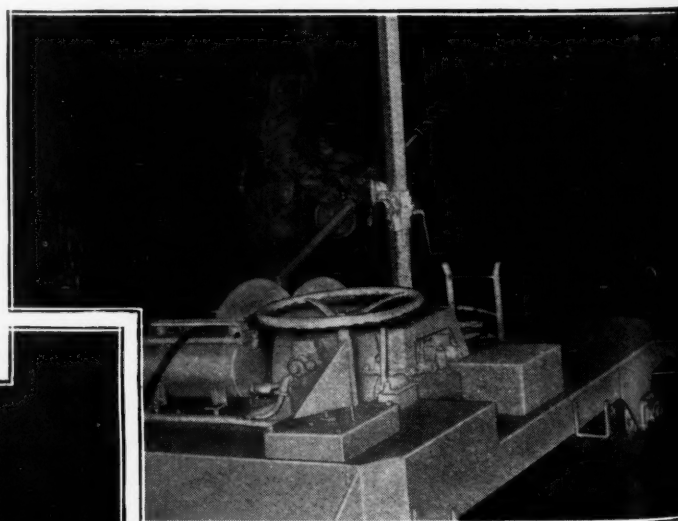
NEW! CP ONE-MAN TRAMDRILL-80



CHECK THESE FEATURES OF THE NEW CP NO. 1800 ELECTRIC TRAMDRILL

- ONE-MAN OPERATION
 - DRILLING SPEED
 - LIGHT WEIGHT, COMPACTNESS
 - DRILLING ON 8-FOOT CENTERS
 - TOP AND BOTTOM DRILLING
 - SPEED OF SETTING UP
 - HYDRAULICALLY-SET POST
 - AUTOMATIC CABLE REEL
- MANEUVERABILITY, TRAMMING SPEED

↑ **EXTREMELY COMPACT:** Complete with a mounted drill, CP 1800 One-Man Tramdrill is only 132 inches long, 58 inches wide. Chassis dimensions, 96 inches long, 42 inches wide. Height of truck bed above ground, 17 inches. Overall height to top of steering wheel, adjustable from 24 inches to 42 inches.

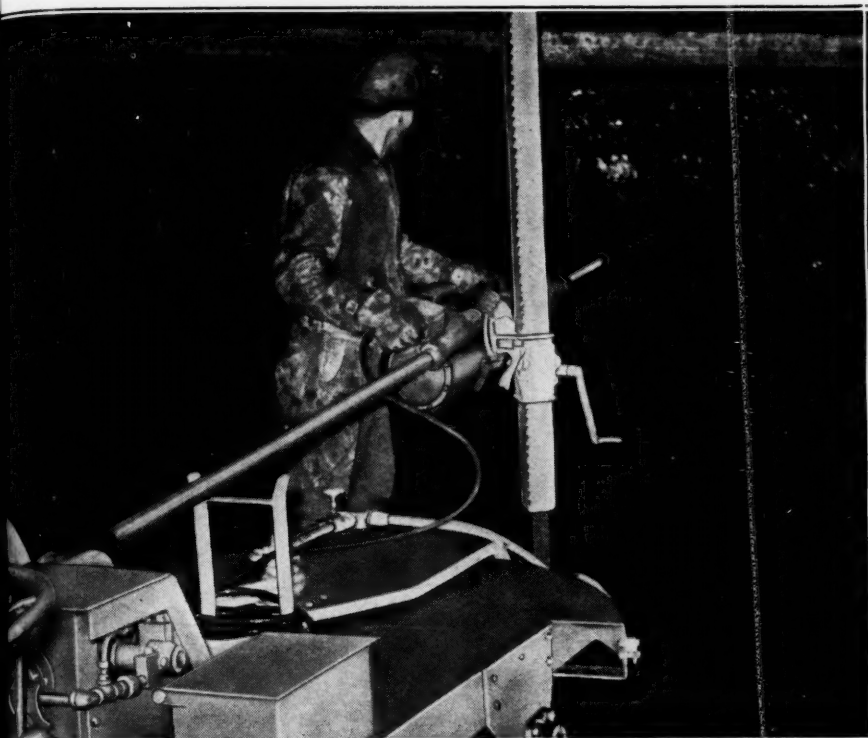


↑ **HYDRAULICALLY-OPERATED POST:** Hydraulic pump, operated from the tramming gear case, sets the post at 2000 pounds pressure—thereby eliminating all possibility of the post coming loose while electric drill is being operated.

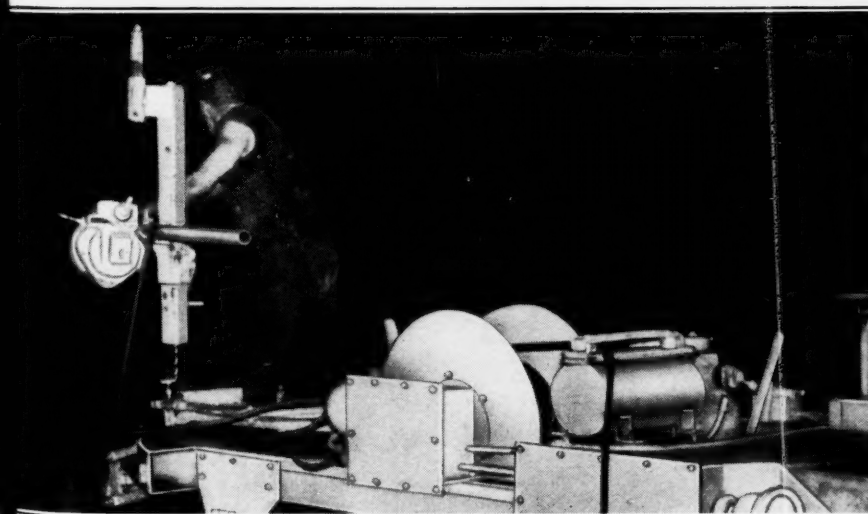


← **TRAMS AT 4 MILES PER HOUR:** Complete with drill, 5-foot post, and 400 feet of cable on automatic reel. Chicago Pneumatic Tramdrill weighs only 2200 pounds. Four wheels on rear truck; two on front end; all pneumatic-tired.

TO 100 9-FOOT HOLES PER SHIFT



↑ **ONE-MAN OPERATION:** With a CP Tramdrill, one man drilled 80 holes—all places available—in one 6-hour shift in a well-known West Virginia coal mine. Holes can be drilled on 8 foot centers, close to rib, or within 6 inches of top or bottom without moving Tramdrill.



**DRILLS HOLES ON 8-FOOT CENTERS
WITHOUT MOVING TRUCK**

Designed for Trackless Mines

NEW YORK—The new Chicago Pneumatic No. 1800 Electric Tramdrill is the first real one-man truck-mounted drill. Thorough tests and time studies in prominent coal mines show that the Tramdrill can be moved from one center to another and set up ready for operation in one minute. 80 to 100 9-foot holes in coal have been drilled per seven-hour shift in contrast with the average of 60 to 70 holes per shift by two men with the standard post-mounted drill.

Designed especially for trackless mines using mobile loaders and shuttle cars, CP Tramdrill has many interesting features—light weight, compactness, top and bottom drilling on 8-foot centers, quick set-up, hydraulically operated post, 4 miles per hour tramming speed.

Write for complete data.

CHICAGO PNEUMATIC
TOOL  COMPANY

General Offices: 8 E. 44th St., New York, N. Y.

← **DESIGNED FOR TRACKLESS MINES:** CP Tramdrill is ideal for trackless mines using mobile loaders and shuttle cars. Interchangeable motors for tramming and drilling eliminate duplicate repair parts.

CHICAGO



PNEUMATIC

ELECTRIC COAL DRILLS

ALSO: Air Compressors, Pneumatic Tools, Electric Tools, Rock Drills, Hydraulic Aviation Accessories, Diesel Engines

POST-MOUNTED
HAND-HELD
ELECTRIC AND
PNEUMATIC TOOLS
FOR MAINTENANCE
AND REPAIR



dimensions. Then
by machine is 6,200 lb.

At the Dun Glen No. 11 mine, the Hanna Coal Co. put in operation a large number of Differential large-capacity 8-wheel ~~motor-dump~~ steel cars, which greatly reduced operating costs.

in the p...
machines...
the P...
tow...

*From the editorial pages of the
February 1941 Issue—Coal Age*

...which greatly reduced operating costs!

There, in a few words, is why you should look to Differential for the soundest methods of making more money from your mining operations. You can obtain the same benefits of increased tonnages and lower costs that this operator and others have achieved by the use of Differential large capacity mine cars with 8-wheel AXLESS trucks.

There are a number of contributing factors to the lowered costs and increased tonnages which are covered in our latest bulletins—write for them.



A trip of Dun Glen cars about to enter the dump house to be quickly emptied by rotary dumper without uncoupling.



Differential High Speed 8-wheel Locomotive which has demonstrated greater pulling power, greater roadability, less maintenance and increased safety.

DIFFERENTIAL STEEL CAR CO.

FINDLAY, OHIO

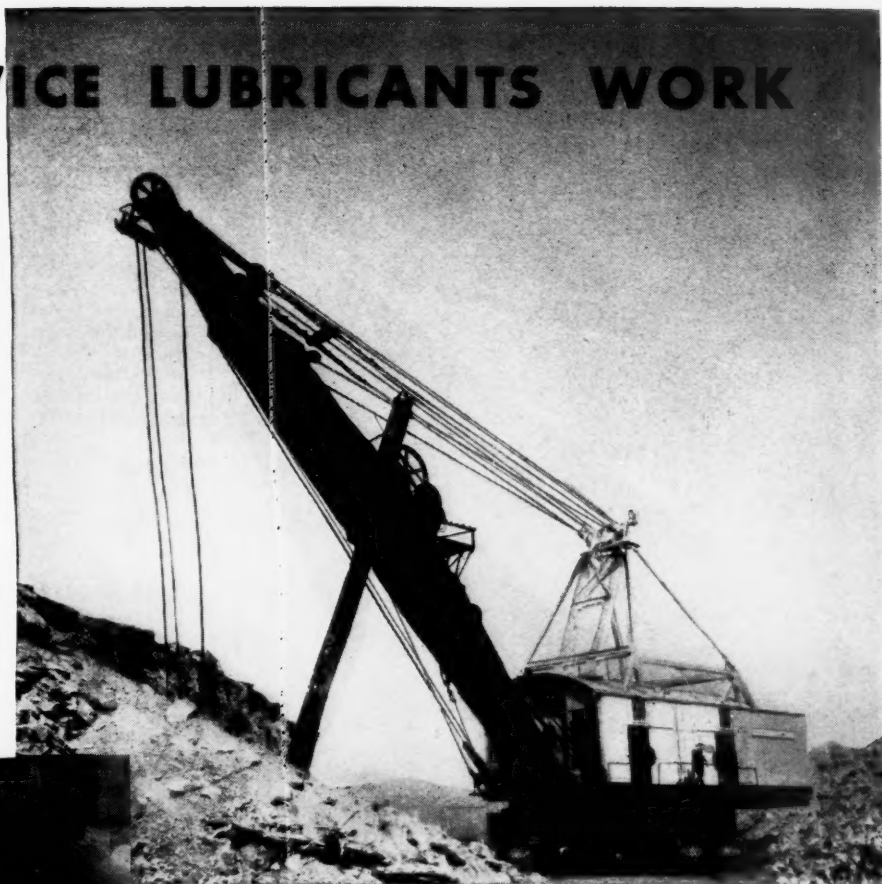
Builders of Haulage Equipment Since 1915

MINE CARS • STRIPPING CARS • MINE LOCOMOTIVES • ROCK LARRIES • COMPLETE HAULAGE SYSTEMS

CITIES SERVICE LUBRICANTS WORK

**ABOVE
and
BELOW**

GROUND



ABOVE YOU SEE one of the hardest-working machines in the world — a great Marion Stripper of the Hanna Coal Company at Georgetown No. 12. Over at the left is another hard worker — a Whaley "Automatic" Loading Machine at Willow Grove No. 10.

CITIES SERVICE TROJAN LUBRICANTS

Cities Service Trojan Lubricants were developed to fulfill a definite need. They're made to "stay put" and provide lubrication to friction surfaces under adverse conditions, sealing out dirt and moisture.

Both use Cities Service Trojan Lubricants . . . and there's a reason. Tough, tenacious, long-lasting Trojan Lubricants keep operating costs down and profits up. They stick to their job of fighting friction in any weather, under the most exacting operating conditions. They'll help give your equipment an extra year of youth!

OIL IS AMMUNITION — USE IT WISELY!



Write to —
CITIES SERVICE OIL COMPANY
 Room 1326, Sixty Wall Tower, N. Y.

or any of the following offices:
 CHICAGO . CLEVELAND . ST. PAUL
 KANSAS CITY . BOSTON

or to
ARKANSAS FUEL OIL COMPANY
 SHREVEPORT . ATLANTA . BIRMINGHAM

A LUBRICANT FOR EVERY INDUSTRIAL NEED

Cities Service coal mine lubricants include:

Car Journal Oils	Loader Grease
Cable Grease	Plant and Shop
Compressor Oils	Machinery Oils
Cutting Oils	Steam Cylinder Oils
Pressure Gun Grease	Mine Car Lubricants
Diesel Engine Oils	Turbine Oils
Electric Motor Oils, Etc.	

**Quick Opening, Full Flow
Easy Operation,
Positive Shut-Off**

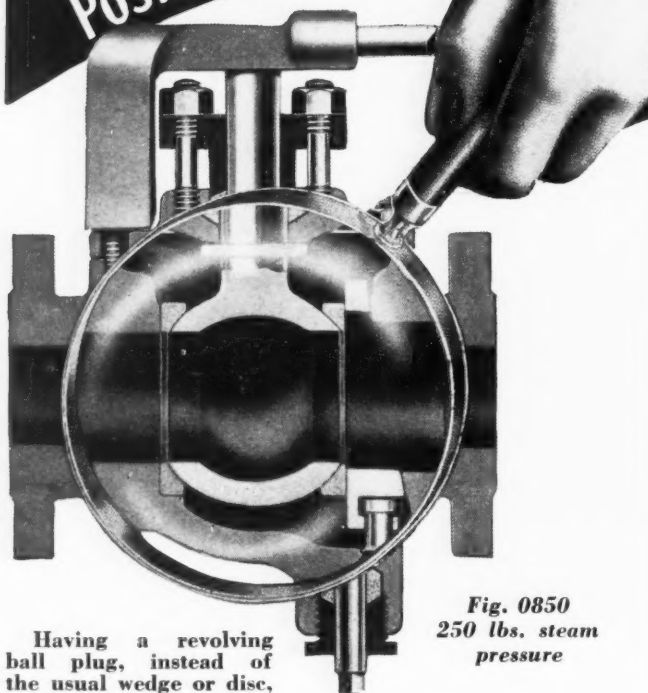


Fig. 0850
250 lbs. steam
pressure

Having a revolving ball plug, instead of the usual wedge or disc, the Fairbanks Sphero offers many advantages possessed by no other valve.

It positively eliminates frictional resistance to stream flow, as the round opening in ball plug is the same size as that in the pipe. When the ball plug is opened or closed, it wipes seating surfaces clean. Its shearing action cuts through heavy solids and liquids that would cause ordinary valves to stick and jam. There is nothing on which scale or foreign matter can accumulate.

A positive shut-off is assured as the seat rings form a perfect fit with the ball. A wedge permits adjustment to make the seat rings absolutely pressure tight. And wear on seat rings is reduced to a minimum by the rotary movement of the ball.

A quarter turn of the lever handle opens or closes the valve "as quick as a wink". And you can always be certain that it is fully open or shut tight because it has a positive stop.

When seat rings or other parts become worn, they can be replaced without removing the valve from the line. Fairbanks valves can be furnished in acid-resisting materials if desired.

No other valve gives such ideal service for blow-off purposes or where a full-flow, quick acting valve is required.

Write now for catalogue No. 21 and name of our nearest distributor.

THE FAIRBANKS CO.



*Valves, Dart Unions, Hand Trucks and
Wheelbarrows*

388 Lafayette St., New York, N. Y.
Boston, Mass., Pittsburgh, Pa.

Distributors in Principal Cities
Factories: Binghamton, N. Y., Rome, Ga.

Fairbanks Sphero Valves

Let this big handbook of successful coal mining practice help you advance!

Here is a complete digest of the best practice of the leading coal mining engineers of the world. No one man could hope to learn by experience alone the many facts assembled in this book. With this volume handy, you have ready for instant reference the answers to thousands of questions—dependable facts on every part of your work. Here is a book that will save time and effort, prevent errors, give the day-to-day help you need toward a better mastery of your job and more rapid advancement.

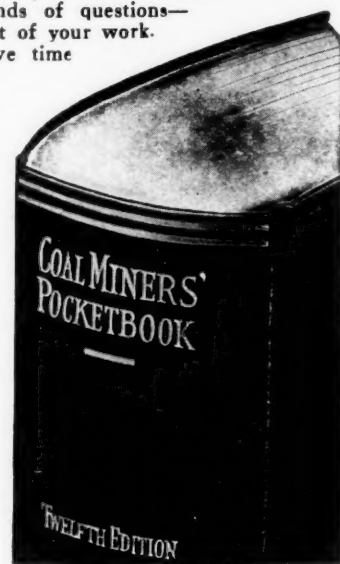
Twelfth Edition

Coal Miners' Pocketbook

Edited by E. N. Zern

Assisted by a staff of specialists

1400 pages, pocket-size
illustrated, flexible, \$6.00



THIS great standard reference work covers every phase of coal mining, from prospecting to preparing coal for the market—from scientific fundamentals to mine ventilation and drainage. Cutting, loading and conveying machinery is described. Hundreds of practical methods and tips on mine working, erecting timbers, hoisting, haulage, etc.—elements of mathematics, mechanics, hydraulics, etc.—tables, definitions, formulas, charts and illustrations in profusion—over 2,000 facts that you need constantly have been assembled by experts in handy form in this book.

See this book for 10 days on approval. Send no money. Pay in small monthly installments if you keep the book.

Send this coupon

- weights and measures
- mathematics
- mechanics
- strength of materials
- specific gravity, weight and other properties of materials
- hydrostatics
- hydraulics
- concrete
- masonry
- heat and fuels
- boilers
- steam engines
- compressed air
- internal combustion engines
- electricity
- power transmission
- surveying
- prospecting
- opening a mine
- methods of working
- explosives and blasting
- mine timbers and roof supports
- wire ropes
- hoisting
- haulage
- cutting, loading, and conveying machinery
- mine drainage and pumping machinery
- the preparation of coal
- lubrication
- ventilation of mines
- mine fires
- safety and first aid
- tables
- glossary of mining terms

ON-APPROVAL COUPON

McGraw-Hill Book Company, Inc.
330 West 42d Street, New York, N. Y.

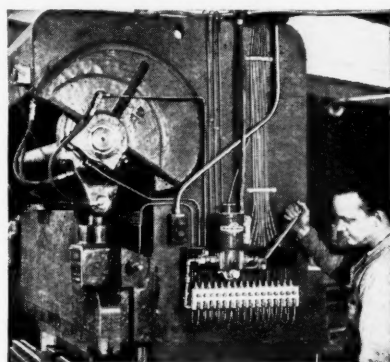
Send me the Coal Miners' Pocketbook for 10 days' examination subject to approval or return. Within 10 days of receipt I will send \$2.00, plus a few cents for postage and delivery, and \$2.00 monthly for 2 months thereafter, or return the book postpaid. (We pay postage on orders accompanied by remittance of first installment.)

Name
Address
City and State
Position
Company C. 4-42

**Bearings that fail are SABOTEURS—Keep
Your Machines out of the Fifth Column!**

EQUIP THEM WITH
**LINCOLN
CENTRO-MATIC**
LUBRICATING SYSTEMS

You can eliminate bearing failure by installing Lincoln Centro-Matic Lubricating Systems on all of your machines—It is a centralized system, consisting of a number of Centro-Matic Injectors—one for each bearing—and a suitable Lincoln pump for delivering lubricant under



pressure, to the Injectors. The system can be hand operated as illustrated, or power operated, with either semi-automatic or full automatic control.

EASY TO INSTALL

Lincoln Centro-Matic Systems are easy to install on new or old machines. Bulletin 888 describes and illustrates the system. A copy will be sent upon request.

142-6

LINCOLN ENGINEERING COMPANY
PIONEER BUILDERS OF LUBRICATING EQUIPMENT
ST. LOUIS, MO.

**PERFORATED METAL
COAL MINING SCREENS**

Manufactured exactly to your specifications
Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.

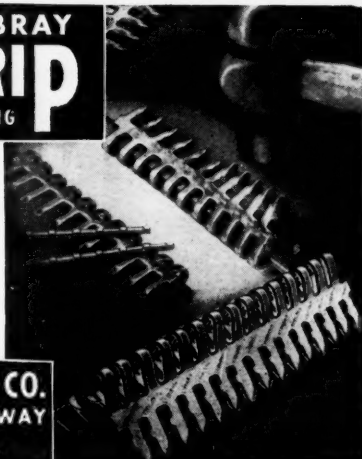
CHICAGO PERFORATING CO.

2443 West 24th Place
CHICAGO, ILLINOIS
Canal 1459

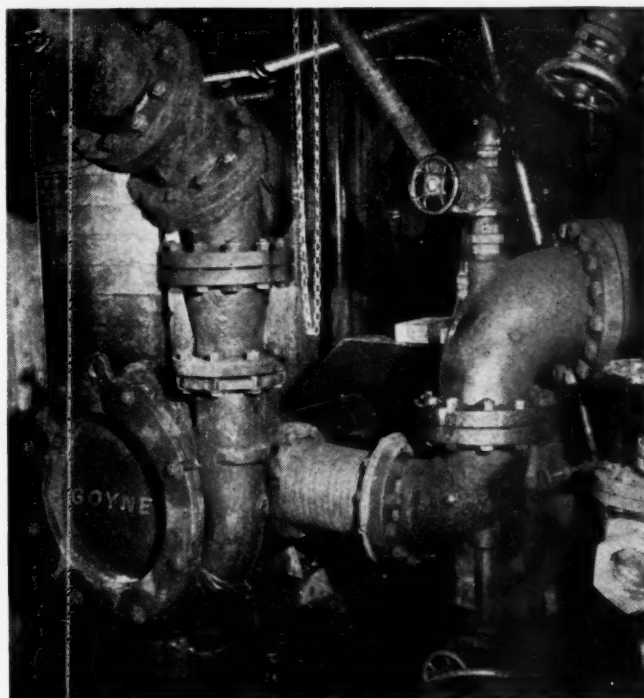
**ARMSTRONG-BRAY
STEELGRIP**
FLEXIBLE BELT LACING

• 8 sizes. Boxed or in long lengths for wide conveyor belts. Easily applied anywhere with a hammer, it compresses belt ends and prevents fraying. 2-piece hinged rocker pin takes up wear. Immediate delivery. Write for Catalog showing most complete line of belt lacing manufactured.

ARMSTRONG-BRAY & CO.
5342 NORTHWEST HIGHWAY
CHICAGO, U.S.A.



GOYNE PROCESS PUMPS



A Sand Pump is only a link in a chain in a coal washing plant, but it can be a strong link if it embodies the following features as does the Goyme:

1. Ease of inspection of all wearing parts. All internal portions are immediately accessible after removing only the rear head of the pump. No suction or discharge piping is disturbed.
2. The one packing box of the pump is subjected only to suction pressure and is readily kept clean by a low pressure clear water line. Long packing and shaft sleeve life is assured.
3. Impeller clearance is adjusted *while the pump is running*, insuring constant pump capacity so essential for uniform washing.
4. There are twenty-eight possible nozzle assembly combinations for each standard pump. Washery designers like this "adaptability feature" as it helps them out of tight places and simplifies piping.
5. We carry the spare parts stock. Order your replacements when needed. Reduce your inventory by using Goyme Process Pumps.

*All inquiries receive prompt
and careful attention.*

THE GOYNE STEAM PUMP CO.
ASHLAND, PA.



WEIGHTOMETER

War objectives of the coal mining industry call for maximum production of all mines serving essential industries. The capacity of your cleaning plant—and its efficiency—will be taxed by double- or triple-shift operation. Get high production at low cost by controlling the tonnage fed in and weighing the rejects.

MERRICK WEIGHTOMETERS assure accurate and speedy weighing for control of tonnage and efficient operation. Leading large tonnage producers are using WEIGHTOMETERS to

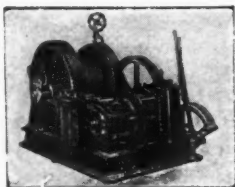
weigh all coal from mines to washing plants
weigh coal after cleaning
weigh waste and rejects
check tonnage payments

WEIGHTOMETERS may be applied to existing belt conveyors or furnished complete with short pivoted conveyor.

BULLETIN CA-375 UPON REQUEST

MERRICK SCALE MFG. CO., PASSAIC, N. J., U. S. A.

FLORY HOISTS



Manufacturers of Steam, Electric and Gasoline Hoists of all types; also parts for all model Flory Hoists.

FLORY MANUFACTURING CO.
BANGOR, PENNSYLVANIA

HENDRICK

Carbondale 1600

for

PERFORATED PLATE

Round—Square—Diagonal—Slot
Any perforation

HENDRICK MANUFACTURING CO.

41 DUNDAFF ST., CARBONDALE, PA.

Sales Offices in Principal Cities.
 Please Consult Telephone Directory.

WOOD PIPE for Mine Drainage

Wyckoff Wood Pipe has an 87 year record of perfect resistance to the corrosive action of sulphurous mine water. It is an ideal, long-time investment—light, easy to lay, and relatively low in first cost

We also manufacture a special Hard Maple Pipe for flushing culm in the Anthracite Region and wood covering for underground steam lines.

Established
1855



Emergency orders
 can be delivered by Truck to
 Mines in Pennsylvania Coal Fields
 following morning after receipt of same.

*shipments from
 stock day after receipt
 of order. Send for catalog.*

A. WYCKOFF & SON CO.

Office and Factory
 No. 35 Home Street, Elmira, N. Y.
 The Originators of Machine Made Wood Pipe

**MAKE YOUR COAL TREATING DOLLAR
DO TWICE THE WORK**

**1 DUSTPROOF
AND
2 FREEZEPROOF
COAL in One Operation**

with
CALCIUM CHLORIDE

Don't let offensive and inadequately dust-proofed coal be a hindrance to greater sales. The coal industry can best combat competitive arguments against coal heat with coal that stays clean and is permanently dust-proofed as well as freezeproofed with calcium chloride. This double duty treating material not only provides the dealer with effective sales ammunition but also facilitates the mechanics of coal handling.

Dusty coal loses customers. Frozen coal costs extra time and money. Don't let this happen to you—treat all of your domestic coal with calcium chloride.

CALCIUM CHLORIDE ASSOCIATION
4145 Penobscot Building • Detroit, Michigan

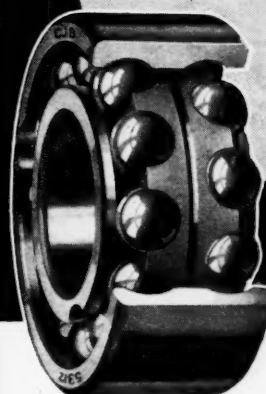
INFORMATIVE BOOKLET—FREE

Get the interesting facts today. Send for bulletin 37—an authoritative, well-illustrated study of coal treating experience in dustproofing and freezeproofing the low-cost and permanent calcium chloride way—no obligation.



CALCIUM CHLORIDE
FOR EFFECTIVE DUSTPROOFING AND FREEZEPROOFING

CJB
AHLBERG
Ball Bearings
**ARE BUILT
TO
TAKE IT**



FOR YEARS

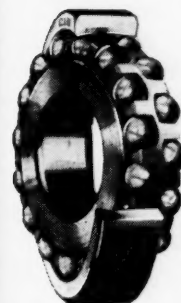
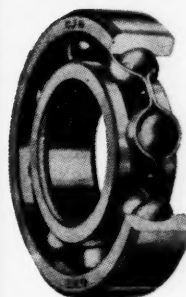
—it has made no difference how "tough" the assignment, **CJB** Double Row Ball Bearings have proved that they are **"Built to Take It."**

• **CJB** deep grooved races—maximum number of balls and solid type ball separators—are design features contributing to the ability of these bearings to take it year after year.

• **NOW**—that's mighty important to designers, engineers and manufacturers of heavy equipment who want ball bearings that can carry heavy radial as well as severe thrust loads or any combination of both!

• Single-Row and Self-Aligning Ball Bearings as well as the Double-Row are in continuous production at Ahlberg in all standard sizes.

• To assist bearing users Ahlberg maintains a competent engineering staff in 23 strategically located branches. The direct use of these facilities is suggested.



AHLBERG
BEARING COMPANY
Manufacturers of **CJB** Master Ball Bearings

★ 3002 WEST 47TH STREET • CHICAGO, ILL. ★

Out West at **PRECISION BEARINGS, INC.** Los Angeles

"Simplex Mine Jacks Keep Coal Rolling"

War production depends largely on coal—a million boilers must be fired to keep industry on the go.

Simplex Mine Jacks speed handling of mechanical equipment in mines, prevent accidents, protect miners and aid them in getting out greater tonnages.

For lifting, lowering and pushing, Simplex Automatic Lowering Jacks get the most work done with the greatest safety. Load is "jacked" down—no chance for load to drop unexpectedly. Toe lift is guaranteed to lift full rated capacity and is concave to grip rails and structural members. Three sizes: 84-A, 14" high; 85-A, 17" high; and 86-A, 20" for thin, medium and thick seams respectively; all of 5-tons capacity.

Simplex Mine Roof Jacks are an absolute necessity under present conditions, in both mechanical and hand mining. They go up faster than posts, hold tighter, take up less room, are easier to move and are more economical.

Made in two sizes: M-8, light duty, 8-ton capacity with 1½" diameter screw and 2" square tube; and M-16, heavy duty, 16-ton capacity with 1¾" screw and 2½" square tubing. Four types of heads: flat swivel, illustrated, for use with wooden cap pieces; "V" type for round timbers; "C" type for square and round timbers and large steel beams; "FF" type for "I" beams and rails.

Send for Bulletin Mines-41 — gives complete details on these and Simplex Mine Timber Jacks, Post Pullers, Emergency Jacks and Conveyor Hold-Down Jacks and other jacks for faster, safer shaft or strip mining.



Templeton, Kenly & Co.

Chicago, Ill.

Better, Safer Mine Jacks Since 1899

Simplex Jacks

A better Jack for every job - many jobs for every Jack

The greatest help a coal mining man can have—

IF YOU want to make sure of getting your certificate of competency—sure of winning a bigger job with bigger pay, get Beard's great books today and put them to work for you.

In these three books you have a practical, always-on-the-job guide that will help you solve the problems you face every day, show you what to do, tell you why it should be done.

Beard's Mine Examination Questions and Answers!

3 volumes — \$7.50, payable in four monthly payments

THESE books explain what a man must know in order to become a mine inspector, a mine foreman, assistant foreman, fireboss, hoisting engineer, safety engineer, shot-firer, etc.

They give you complete and authoritative information about air and gases, explosives, safety requirements and methods, mechanics, engines, hoisting, drainage, pumping, ventilation, timbering, instruments, and every other detail that the practical mining man must know.

Can you answer these questions—

What is meant by splitting the air current and what are the advantages derived from such methods?

Can a miner live in air in which the oxygen content is reduced to 17 per cent?

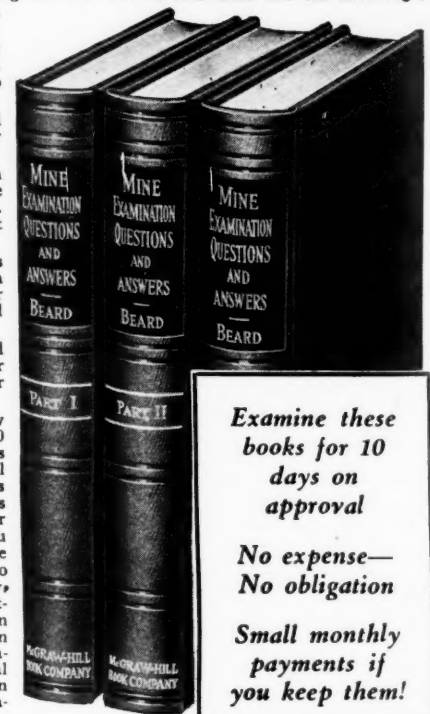
Name five duties imposed on mine foremen by law?

In what time can an engine of 40 effective hp. pump 4,000 cu. ft. of water from a shaft 360 feet deep?

What are the advantages and disadvantages of a gasoline pump, an air pump and an electrical pump?

What is the estimated tonnage per acre, per foot of thickness, for bituminous coal?

These are but a few of the more than 2000 questions given in Beard's books together with full correct answers. Hundreds of men have used this method to prepare for higher, better jobs. You can too, if you have the Beard books and plan to use them systematically. They are the best investment that a mining man can make—not only as an aid for passing examinations but as practical reference volumes on everyday mining operation problems.



Examine these books for 10 days on approval

No expense—No obligation

Small monthly payments if you keep them!

McGraw-Hill ON-APPROVAL COUPON

McGraw-Hill Book Co., Inc., 330 West 42nd Street, New York

Send me, charges prepaid, Beard's Mine Examination Questions and Answers, 3 volumes, for 10 days' examination. If satisfactory I will pay \$7.50 at the rate of \$1.50 in ten days and \$2.00 per month. If not wanted I will return the three volumes postpaid.

Signature

Address

City and State

Company

Position

(To insure prompt shipment write plainly and fill in all lines)

Clean your coal
the **RS** way
AND
COMPANY

For wet washing use

The IMPROVED LAUNDER-TYPE

HYDRO-SEPARATOR

write
for
BULLETIN
No.
156

For fine coal washing

use **HYDROTATOR**

write
for
BULLETIN
No.
157

For dry cleaning

fine coal 1 1/4" x 0"

**STUMP AIR-FLOW
CLEANER**

write
for
BULLETIN
No.
158

ROBERTS and SCHAEFER CO.

307 North Michigan Avenue, Chicago

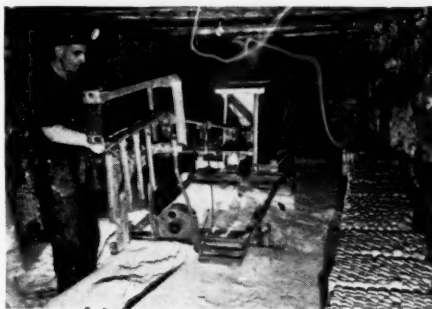
P. O. Box 865
PITTSBURGH, PA.

P. O. Box 570
HUNTINGTON, W. VA.

SEAL SHOTS—SAFER—

**FASTER—
CHEAPER!**

with
**SEAL-
TITE
TAMPING
BAGS**



Picture shows rock dust being loaded into SEAL-TITE TAMPING BAGS. Properly tamped holes cut powder costs and help your blasting crew in bringing down-falls. The largest mining companies in United States and throughout the world use SEAL-TITE TAMPING BAGS with great success.

**400 to 600 bags an hour packed with
"THE DUMMY MAKER"**

This efficient machine (shown in picture above) pays for itself quickly—no complicated machinery—easy to use—dependable—steps up working efficiency—saves time and costly skilled labor—ruggedly built to withstand constant use—uses clay or sand for stemming material—mounted on trucks for portability—operates on 1/4 h.p. motor.

"The Dummy Maker"
and 2 helpers can pack
400 to 600 bags an hour.

SEAL-TITE
KRAFT
100%

Your guarantee of
Satisfaction

THE TAMPING BAG COMPANY
MT. VERNON, ILL.

**WRITE OR ASK FOR
FREE SAMPLES**

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT : "OPPORTUNITIES" : EQUIPMENT
BUSINESS : USED OR RESALE
UNDISPLAYED — RATES — DISPLAYED

10 CENTS A WORD. MINIMUM CHARGE \$2.00.
Positions Wanted (full or part time salaried employment only), 1/2 the above rates payable in advance.

Box Numbers—Care of publication New York, Chicago or San Francisco offices count as 10 words. Discount of 10% if full payment is made in advance for 4 consecutive insertions.

NEW ADVERTISEMENTS received by April 30th will appear in the May issue, subject to limitations of space available.

Individual Spaces with border rules for prominent display of advertisements.

The advertising rate is \$6.30 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured 1/4" vertically on one column, 3 columns—30 inches—to a page.

POSITION VACANT

WANTED ASSISTANT to General Manager experienced Mine Supervisor familiar in operating Shaker Conveyors and Mobile Leaders in thin seam coal. Location West Kentucky. Reply with full statement. P-608, Coal Age, 520 N. Michigan Ave., Chicago, Ill.

POSITIONS WANTED

YOUNG MARRIED MAN with draft deferment—I.C.S. Mining Engineer, 18 years experience, 8 years Mechanical and administrative experience desires a position as assistant manager in charge of operation. PW-613, Coal Age, 330 W. 42nd St., New York, N. Y.

SUPERINTENDENT OR PRODUCTION MANAGER. Age 36. Married, 18 years experience well versed on mechanical mining. Large firm preferred. PW-614, Coal Age, 330 W. 42nd St., New York, N. Y.

BUSINESS OPPORTUNITIES

Coal Mines

RAIL-RIVER coal mines in midwest available on lease basis. Address BO-615, Coal Age, 330 W. 42nd St., New York, N. Y.

BUSINESS OPPORTUNITIES

Strip Coal

20 ACRES Pittsburgh seam coal 1 1/4 miles from R.R. Cover averages 15 feet. Very reasonable. BO-616, Coal Age, 330 W. 42nd St., New York, N. Y.

FOR SALE

JOY LOADER, Bradford Breaker Outfit, Four 20 Cubic Yard Sidedump Railroad Cars, Two Skips or Cages, Hoisting Engines, Steel Head-frame with Sheaves. FS-617, Coal Age, 330 W. 42nd St., New York, N. Y.

COAL PROPERTY

LEASE: Over 500 acres of land that over-lays anthracite coal seams. This land has been prospected and drilled. At present one 6 ft. seam is exposed. This tract is located twelve miles west of Martinsburg, W. Va.

For further information contact:

J. A. HADERER
902 West 24th St. Wilmington, Del.

For Sale— CENTRAL PENNSYLVANIA COAL MINE

New York Central & Pa.
Railroad Connection

"B" Seam, Indiana County, Pa., near Dixonville. Analysis, under slate roof area (major portion of property) ash, 6%; sulphur, 1%; volatile 30%; B.T.U. 14,000. Analysis under sandstone roof area, ash, 6%; sulphur, 2%; volatile, 30%; height of coal, 3 feet; 1600 acres.

Mine opened January, 1920, and developed to 800 G.T. per day, mine closed December, 1924. Mine equipment in place, 32 houses and buildings.

Mine can be put into operation in 60 days.

John E. Evans, Sr.
35 St. Nicholas Building, Pittsburgh, Pa.



WE LOOK INTO THE EARTH

By using Diamond Core Drills. We drill for Limestone, Gypsum, Taic, Fire Clay, Coal and all other minerals.

PENNSYLVANIA DRILLING CO.
Drilling Contractors
Pittsburgh, Pa.

DIAMOND CORE DRILLING, for any mineral. More than fifty gasoline, steam and electric drills, suitable for any job. OUR SPECIALTY—testing bituminous coal lands. Satisfactory cores guaranteed. Prices very reasonable.

LEON H. HOFFMAN, Pres.
HOFFMAN BROS. DRILLING CO.
PUNYSTAWNEY, PA. Est. 1902 Tel. 382

6 YD. STRIPPER SHOVEL
200-B Bucyrus 6 years old. 75 ft. Boom, 60 ft. Dipper stick, 6 yd. Dipper Steam Shovel.

SHOVEL & DRAGLINE:
4 yd. 120 B Bucyrus Electric Shovel & 100 ft. boom Dragline
2½ yd. 100 B Elec. Shovel.

DIESEL DRAGLINES

3W 4W & 5W Monighan Walkers, 90 to 110 ft. booms.
3 Yd. P.&H. 900, 97' boom.
2½ Yd. 48B Bucyrus 80' boom.
2 Yd. 750 Lima. 60' boom.

AIR COMPRESSORS:
(7) Steam 60 ft., 300 ft., 600, 1000 & 1940 ft. (12") Belted, 360, 676, 870, 1000, 1300 ft.
(12) Diesel 105, 315, 520, 676 & 1000 ft.
(6) Electric, 1300, 1500, 2200, 2600, 5000 ft.
(14) Gasoline, 110, 160, 220, 310 & 370 ft.

COAL CRUSHERS:
Jeffrey Single Roll 18x18, 24x24 & 30x30
Link Belt 26x24 Double Roll Crusher

HYDRAULIC CARWHEEL PRESSES:
100 Ton, 150 Ton, 300 Ton, 300 & 400 Ton Caldwell - Niles - Wood - Watson Stillman

RUBBER CONVEYOR BELTS:
1000' 60", 600' 30", 300' 20", 1600' 42", 900' 48", 1450' 36", 1200' 24", 900' 18", 600' 16", 350' 14".

CONVEYOR PARTS:
Idlers, Head & Tail Pulleys, Steel Frames, Tripper, etc., 14 in., 60 in. Large Stock here.

SYNC. MOTOR GENERATORS & ROTARYS:
100 KW Ridgway 1200 RPM 3/60/2300/250-275
150 KW G.E. 1200 RPM 3/60/2200-250-275
200 KW Ridgway 900 RPM 3/60/2200-250-275
3-100 KW G.E. 275 v. 1200 RPM Rotarys

STORAGE BATTERY LOCOMOTIVES:
2½ ton Whitcomb 24 ga. New Batteries
2-4 ton G.E. 30 in. ga.
2-5 ton Mancha 30 in. ga.
4-5 ton G.E. 36 in. ga.
3-7 ton Goodman 36 ga. Battery & Trolley
8-6 ton Baldwin Westgh. 42 ga. & 36 ga.

TROLLEY LOCOMOTIVES:
2½ ton Westinghouse 24 ga.
4-6 ton & 3-5 ton Goodman 36 ga.
3-6 ton Goodman 30 ga.
4-6 ton Goodman 42 ga.
5-6 ton Westinghouse 42 ga.
2-8 ton Goodman 36 ga.
10 ton Goodman 42 ga. & 13 ton Jeffrey

VIBRATING SCREENS:
9 Tyler Hummer 3x6, 4x5, 4x8 & 4x10
2 Robins Gyrex 4x8½
4x12 Niagara, 3x8 L. B., 5x6 Simplex

CARS:
120-4 ton 42 ga. S.D. Mine Cars
60-Western 16-20-30 yd. Side Dump

SHOVELS, CRANES & DRAGLINES:
3 W 90' Boom, 6 W 160' Boom, Model 6150, 175' Boom, Diesel, Monighan Walkers
1 yd. K 30 Link Belt 50' Boom Crane
2 yd. Page 70' Boom Diesel Dragline
1½ yd. Marion 450 Elec. Shovel
1½ yd. Lima Diesel Shovel & Dragline
2 yd. Link Belt Elec. Shovel & Dragline
25 ton Browning 50' Boom Loco. Crane
7 Conway 20A, 30A, 50A, 60 & 75 Muckers

MINE LOADERS:
Junior Joy 36 ga. Low Pan
Conway 20 Mucker
3-5 BU & 7 BU 36 or 42 ga. Joy
9-Goodman 260 & Jeffrey 44L

MISCELLANEOUS
5'x160' Traylor Rotary Dryer
100 HP G.E. 3/60/440 v.-900 RPM Elec. Motor
6 Goodman 12CA & 12 DA 6 ft. Cutters
9x8 Sullivan Mine Compressors
Clamshell Buckets ¾, 1, 1½ & 2 yd. Cap.
30 ton & 12 ton Vulcan Std. Ga. Gas. Loco.

WANTED TO BUY:
Complete Mines—M.G. Sets, Locomotives, Compressors, Conveyors, Cranes, Crushers & Rotary Converters. Also Rails, Screens, Pumps, Cars, Mine Loaders & Mining Machines.

Tidewater Equip. & Machy. Corp.
305 Madison Ave New York, N. Y.

USED COPPER WIRE

TROLLEY

100 miles—3/0 Copper, bare.
90 miles—4/0 Copper, bare.

TRANSMISSION

257 miles—#2 Hard drawn Copper, bare.

DISTRIBUTION

185 miles—4/0 Copper, bare.
3 miles—500,000 CM. Copper, bare.

ALSO — 4/0 & 3/0 INSULATED WIRE

for Better Used Equipment
WRITE • WIRE • PHONE

DULIEN STEEL PRODUCTS, Inc.
414 First Ave. So. Seattle, Wash.
LOS ANGELES • BUTTE • NEW YORK
PORTLAND • NEW ORLEANS

FOR SALE

HOISTS

1—1300 H.P. Vulcan Shaft Hoist, with cylindrical-conical 10' drum.
1—900 H.P. Vulcan Double Drum Slope Hoist.
1—700 H.P. Allis-Chalmers Slope Hoist, good for 7000' of 1½" rope.
1—300 H.P. Lidgerwood Slope Hoist, drum good for 5000' of 1" rope.

ROTARY CONVERTERS

1—200 KW General Electric Rotary Converter.
1—500 KW General Electric Rotary Converter.
Both late pedestal type, form P, 250/275 volt DC, with switchboards and switchgear, including transformers for 2300 volt.

MINING MACHINES

25—CE-7 AC Sullivan Shortwall Mining Machines. Just taken out of service—excellent condition.
15—5-BU Joy Loading Machines, 250 volt, 42" gauge. In the very best of condition. Ready to go right into service.
1—Practically new Jeffrey 29-L Track Cutter, used less than six months.

LOCOMOTIVES

We have several 6, 8, 10, 13 and 15-ton completely rebuilt locomotives, 250 and 500 volt.
We specialize in Buying Complete Mines That are Going Out of Business or from Receivers in Bankruptcy, Administrators of Estates, etc.



Frank J. Wolfe

OUR FINANCIAL RESPONSIBILITY IS YOUR GUARANTEE OF SATISFACTION!

COAL MINE EQUIPMENT SALES CO.

★ WE BUY & SELL USED & REBUILT EQUIPMENT FOR MINES

Offices & Warehouse: TERRE HAUTE, INDIANA

MINE LOCOMOTIVES
5 to 20 ton.

MINING MACHINES
Short and Arc Wall.

STRIPPING SHOVEL

M. G. SETS & ROTARY CONVERTERS

ROTARY DUMP
With weigh pan & scale.

PUMPS and FANS
COAL CRUSHERS

Will buy, sell or exchange.
What do you need?

THE INDUSTRIAL EQUIPMENT CORP.

Warehouse: Carnegie, Pa.

P.O. Box 1647 Pittsburgh, Pa.

Mine Equipment For Sale

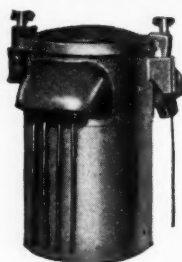
- 1—Three track tippie and shaker screen.
- 1—48" Anti-friction conveyor belt complete, 454 ft. centers, 500 tons per hrs. capacity.
- 1—Link-Belt rotary mine car dump with car feeder.
- 1—100 ton steel bin.
- 1—3½ ton capacity weigh basket and Fairbanks Morse Scales, equipped with weightograph.
- 1—60 cu. ft. automatic dump basket aerial tramway complete, 2 in. track cable 1200 ft. long.
- 1—100 ton Fairbanks Morse R.R. track scales, 55 ft. deck.
- 9—35A Jeffrey shortwall mining machines, 50 H.P., 250 volts, 42 in. gauge.
- 1—6 ft. Jeffrey Airvane Fan.

All equipment in good operating condition.
For complete information address:

CRESCENT MINING COMPANY

Box 267 PEORIA, ILL.

—TRANSFORMERS—



TRANSFORMERS WANTED

in operating condition or burnt out. Mail us list giving complete nameplate data and stating condition.

We Rewind, Repair and Redesign all Makes and Sizes
ALL TRANSFORMERS GUARANTEED FOR ONE YEAR

Write for Catalog No. 136-B

THE ELECTRIC SERVICE CO., INC.

"AMERICA'S USED TRANSFORMER CLEARING HOUSE"
STATION M Since 1912 CINCINNATI, OHIO

WANT TO BUY

- 1 to 6 Tyler or Hummer Vibrating Screens.
- 1—30x30 or 2 smaller roll type Coal Crushers.
- 1—200 to 300 KW M.G. Set.
- 1—50 to 60 Ton Locomotive.
- 20 Ton or Larger Locomotive Crane.
- 1—Rotary Dryer 5x60 or equal.
- 2—1300' or equal air compressors.

RUSSELL STANHOPE

60 East 42nd Street New York, N. Y.

NEW "SEARCHLIGHT" ADVERTISEMENTS

received by April 30th appear in the May issue, subject to space limitations.

Address copy to the Departmental Staff

COAL AGE

330 West 42d St., New York City

REBUILT EQUIPMENT—READY TO SHIP

MINING MACHINES

CE-6 Sullivan 250 v. DC.
CE-7 Sullivan Shortwall 250 v. 6' bar
CE-7 Sullivan Shortwall A.C. 220/440

MINE LOCOMOTIVES

4½ ton West. 250 v. 36/42" ga.
6 ton Atlas 220 v. 3 ph. 60 cy.
10 ton Milwaukee GASOLINE
1—10 ton Jeffrey MH-78 550 v. 44" ga.
1—12 ton West. 907C 550 v. 44" ga.
1—13 ton Jeffrey MH-110 550 v. 44" ga.

ROTARY CONVERTERS

150 kw. West. 250 v. 1200 rpm 2200/3/60.
150 kw. G.E. HCC 250 v. 1200 rpm. 440/3/60.

TRANSFORMERS

3—10 kva. Pgh. 2200-220/110/1/60
3—20 kva. G.E. 2200 v. 220/110-1/60.
3—37½ kva. West. 22000-2200/1/60
1—50 kva. Burke 2200-110/3/60
2—75 kva. Burke 2200-110/3/60
1—100 kva. West. 2200-220/110/1/60
3—500 kva. West. 22000-2200/1/60.
3—833 kva. West. 22000-2200/1/60.

SPEED REDUCERS

Thomas, 3 HP ratio 100:1
Cleveland 600 AT 10 HP. ratio 90:1

LATHES

22"x10' Putnam Lathe

SHAKER SCREEN

La Del Shaker Screen 62¼" wide, 8' long.

LOADING MACHINE

1—Jeffrey 44 E.E. open type 250 v. DC 42" ga.

HOISTS

25 HP. Thomas 18" face 20" dia.
40 H.P. single drum AC 220/3/60.
100 H.P. Lidgerwood 2 drum AC or DC Motor

SLIP RING MOTORS

3 ph. 60 cy.

HP.	Make	Speed	Type
700	G.E.	393	MT-432
400	West.	1170	CW
260	Burke	600	EM-65
200	West.	690	CW-956A
100	West.	1750	

230 V. D.C. MOTORS

HP.	Make	Speed
125	G.E.	1750 rpm.
100	West.	250
85	G.E.	530
75	West.	1700 rpm.
75	West.	475
75	Reliance	1750
50	West.	975 rpm.
50	West.	1700 rpm.

A.C. GENERATORS—3 ph. 60 cy.

75 kw. G.E. 220 v. 900 rpm.
219 kva G.E. 2200/440/220 v. 200 rpm.

DC GENERATORS—250 Volt

80 kw. West 265 rmp.
100 kw. G.E. 550 rpm.

A. C. Motors—3 ph. 60 cy.

HP	Volts	Make	Type	Speed
150	220/440	West.	CS	1800
150	2300	West.	Syn.	900
200	2200/440/220	West.	CS	250
200	2200	G.E.	IK-15	1200
200	220/440	West.	CS	1200
200	220/440	West.	CS	720
200	220/440	West.	CS	600
225	2200	West.	CS	900
250	220/440	West.	CS	900
250	2200	West.	CS	1200
275	2200	West.	CS	1800
300	220/440	West.	CS	1150
300	2300	West.	CS	1200
300	2200/440/220	West.	CS	450
350	2200/440/220	West.	CS	450
400	2200/440/220	West.	CS	500
450	2200/440/220	West.	CS	600
500	2200/440/220	West.	CS	720
600	2200/440/220	West.	CS	900

CENTRIFUGAL PUMPS

4x3 Harris, 320 rpm.
4x4 Weinman, 500 gpm.
6x6 Gould, bronze, 1300 gpm.
8x8 Weinman, bronze.
5x6 Hayton, 750 gpm.
6x6 Manistee, 750 gpm.
6x6 American, 1000 gpm., bronze.
6x6 Weinman, 1000 gpm.

ENGINE GENERATOR SETS

50 kw. West. 220/3/60 Ames STEAM.
75 kw. G. E. 250 V. D.C. Skinner STEAM.
75 kw. G.E. 220/3/60 Bessemer GAS.
80 kw. West. 250 V. Belted 110 Bessemer GAS.
100 kw. Fair Morse 2400/3/60 belted DIESEL.
175 kw. G.E. 2200/3/60 Ridgway STEAM.
175 kw. West. 2200/3/60 Skinner STEAM.
200 kva. Fair Morse 2400/3/60 4 cyl DIESEL.
225 kw. Elec. Machy 2300/3/60 Ideal STEAM.
300 kw. West. 250 V. D.C. Skinner STEAM.

TURBINE

1—Kerr Steam Turbine 450 BHP 3800 rpm., 5" intake 12" exhaust with Kerr Reduction Unit 3800 to 720 rpm., 115# pressure.

SPECIAL BARGAINS

Jeffrey type 43 A. 250 V.D.C. Short-wall Cutter and Loader, 35½" high, 6' undercut, 36" ga. Flameproof motor.

DUQUESNE ELECTRIC & MFG. CO. . . . PITTSBURGH, PA.

MINE HOISTS

- 1—Vulcan 30" Band Friction with 50 H.P. electrical equipment.
- 1—Flory 48" Band Friction with 150 H.P. motor and control.
- 1—Lidgerwood Haulage Hoist 60" drum 6000 ft. 1½" rope, 300 H.P. electrical equipment.
- 1—Vulcan Cylinder Conical Drum Shaft Hoist, 350 ft. 1½" rope with 400 H.P. motor and control.
- 1—Nordberg Cylindro-conical Shaft Hoist, 400 ft. 1½" rope with 600 H.P. motor and control.

And other hoists to suit all mining conditions

Jones Mining Equipment Company

541 Wood Street Pittsburgh, Pa.

MINE RAILS

Super-Quality Machine-Reconditioned—not ordinary Relayers.

Fully Guaranteed—shipped anywhere—subject to inspection and approval at your Mine.

NEW RAILS, FROGS & SWITCHES, SPICE BARS, TIE PLATES, BOLTS, NUTS, SPIKES, GAUGE RODS, OTHER ACCESSORIES

Although our tonnages are not as large as heretofore, most sizes are usually available for prompt shipment.

Every effort will be made to take care of your emergency requirements.

Phone, Write or Wire

L. B. FOSTER CO.

PITTSBURGH - CHICAGO - NEW YORK

ROTARY CONVERTERS

500 KW WEST. SYN. 275 V., 6 Ph., 60 Cy., 1200 RPM, Pedestal type, 2300/4000 V. Transformers.
300 KW G.E. SYN. 275 V. HCC. 6 Ph. 60 Cy. 1200 RPM, form P. 2300/4000 V. Transformers.
300 KW G.E. SYN. 575 V. HCC. 6 Ph., 60 Cy., 1200 RPM, form P. 2300/4000 V. Transformers.
200 KW WEST. SYN. 275 V., 6 Ph., 60 Cy., 1200 RPM, Bracket type, 2300/4000 V. Transformers.
200 KW AL-CH SYN. 275 V., 6 Ph., 60 Cy., 1200 RPM, Pedestal Type, 2300/4000 V. Transformers.
200 KW R.W. SYN. 275 V., 6 Ph., 60 Cy., 1200 RPM, Pedestal type, 2300/4000 V. Transformers.
150 KW R.W. SYN. 275 V., 6 Ph., 60 Cy., 1200 RPM, Pedestal type, 2300/4000 V. Transformers.

MOTOR GENERATORS

300 KW G.E. IND. 275 V., 440 V., 3 Ph., 60 Cy., 720 RPM, Manual Switchgear.
200 KW G.E. IND. 275 V., 440 V., 3 Ph., 60 Cy., 720 RPM, Manual Switchgear.
200 KW G.E. SYN. 275 V., 2300 V., 3 Ph., 60 Cy., 100% P.F., 720 RPM, Manual Switchgear.
100 KW WEST. SYN. 275 V., 2300 V., 3 Ph., 60 Cy., 100% P.F., 900 RPM, Manual Switchgear.

LOCOMOTIVES

13-T JEFFREY, 250 V., MH-110 Mts., 44"-36" Ga.
13-Ton WESTGHE, 250 V., 908-C Mts., 36" Ga.
10-Ton GOODMAN, 250 V., 29-A Mts., 36" Ga.
10-Ton GOODMAN, 510 V., 36-B Mts., 42" Ga.
8-Ton WESTGHE, 250 V., 906 Mts., 48"-36" Ga.
6-Ton WESTGHE, 250 V., 904-C Mts., 42"-36" Ga.
4-Ton WESTGHE, 250 V., 902-C Mts., 36" Ga.
4-Ton GOODMAN, 250 V., 42-I Mts., 44" Ga.

Each unit listed above is owned by us and is available now for immediate purchase.

WALLACE E. KIRK COMPANY

Incorporated

501 Grant Building Pittsburgh, Pa.

RAILS—CARS

All sections of rails and good serviceable second hand cars, all gauges, also spikes, bolts, frogs, switches and ties

M. K. FRANK

480 Lexington Ave.
New York City

450 Fourth Ave.
Pittsburgh, Pa.

MINE EQUIPMENT FOR SALE

Locomotives—Mining Machines
Pumps—Motors—Transformers
Steel Tipples—Rescreeners
Steam Hoists—Electric Hoists
Compressors—Loading Booms
Engines—Generators—Scales
Miscellaneous Mine Equipment

Our own modern machine shop is available to repair and modernize your equipment.

Complete Mines dismantled and sold.

HAIR EQUIPMENT COMPANY

Office and Warehouse

Reed and Election Streets

BENTON, ILLINOIS

FOR SALE

- 1—200 KW Westg. Syn. Motor Generator Set 600 V. D.C., Gen., connected to 290 H.P. Synch. motor 3/60/2200 and 900 RPM, with exciters and controls.
- 4—50 H.P. G.E. unused slip ring Type MTC Hoist & Crane Motors, 3/60/440 with new controls.

IRON & STEEL PRODUCTS, INC.

13484 So. Brainard Ave., Chicago, Illinois.
"Anything containing IRON or STEEL"

SEARCHLIGHT SECTION

BUY FROM A CONCERN BOTH FINANCIALLY AND MORALLY RESPONSIBLE

LOCOMOTIVES

Jeffrey: 6 ton, and 4 ton, all gauges, 250 volt.

Goodman: All 250 volts.

- 1—10 ton, 33-I-4T, 44"
- 1—6 ton, 30B, 48" 1—5 ton.
- 1—5 ton, W-1-2, 36"

Westinghouse: All 250 volt.

- 1—4 ton, 902, 48" 1—13 ton, 102, 44"
- 1—904 c. 44" 500 volt. Also 906 motors.

AERIAL TRAMWAYS • HOISTS • PUMPS • MOTORS • TRANSFORMERS • BOND WELDERS • RESISTANCE, COMPRESSORS • CAR RETARDERS • DUMPS
SPEED REDUCERS • FIELD FRAMES • ARMATURES • GOODMAN HYDRAULIC SHOVEL • MOTOR STARTERS AND CONTROLLERS—AC & DC • DROP
BAR SUPPORTS (Gooseneck), 29B and 29C • MINING MACHINE TRUCKS • SWITCHBOARDS • CIRCUIT BREAKERS—AC & DC • CONVEYOR HOISTS
COAL CRUSHERS, double roll 12"x16" single roll 24"x24" and 18"x16" • Sullivan BIT SHARPENER • TURBO-GENERATOR 500 K.W. 275 volt DC • ROPE &
BUTTON CONVEYOR 400' long • LATHES, PLANERS, SHAPERS • LINK BELT, • ELECTRIC SLATE DUMP.

GUYAN MACHINERY COMPANY Logan, W. Va.

SUBSTATIONS

275 volts, D.C.

- 1—200 KW West. M-G Set.
- 2—200 KW Ridgeway Converters.
- 150 KW West. Rotary Converter.
- 2—150 KW, 2—100 K Ridgeway M-G Sets.
- 1—150 KW West. M.G. Sets.
- 1—200 KW G.E. Rotary Converter.

MINE FANS

ALUMINUM

36"—48" and 60" with adjustable pitch blades.

IMMEDIATE DELIVERY

2—7 BU JOY LOADERS, 250 volt, 42" gauge. Now in operation, will be released about April 15. In good operating condition. Subject prior sale.

10—JOY 5 BU LOADING MACHINES, 250 volt, 42" gauge 52" height, 35 H.P. motors; all in first class operating condition, can be seen in operation in Central Illinois, loading large tonnage. IMMEDIATE DELIVERY.

MINING MACHINERY SALES CORP.

1214 Fisher Building CHICAGO

LINK-BELT UNLOADING TOWER

SUITABLE FOR COAL OR ORE

GANTRY TYPE • CAPACITY 750 T.P.H.

RAIL SPAN 44' • OVERALL HEIGHT 114' WIDTH 166'
 COMPLETE WITH WIRING AND 8 SELF-CONTAINED
 3 PHASE MOTORS AND BUCKET

ERMAN-HOWELL & CO., INC.

332 S. MICHIGAN AVE.

CHICAGO, ILL.

NEW and REBUILT STORAGE BATTERY

LOCOMOTIVES

1 1/4 to 10 Ton—18" to 56" Track Gauge
GREENSBURG MACHINE CO.
 Greensburg, Penna.

- 1—125 HP Model 6/71 General Motors Diesel Engine V-belt drive to 85 KW D.C. Generator.
- 1—6" Hill Centrifugal Pump direct connected to 50 HP A.C. Motor. 170' head.
- 3—Myers 6x8 Bulldozer Pumps.
- 1—Mayer Bros. Trip Hammer.
- 1—Toledo Printweigh Truck Scale, 24'x8' Deck.
- 2—15 HP D.C. 250 Volt Vertical Motors.
- 1—30 HP D.C. 250 Volt Motor. 1200 RPM.
- 2—10 HP A.C. 220 Volt Motors.
- 1—7 1/2 HP A.C. 220 Volt Motor.
- 1—5 HP A.C. 220 Volt Motor.

JEFFREY COAL COMPANY

317 Lyons Street Saginaw, Mich.

LOCOMOTIVE

6 ton Milwaukee—Gasoline

36" Gauge

WEST PENN MACHINERY COMPANY

1210 House Building Pittsburgh, Penna.

FOR SALE

Several Goodman Universal Mining machines complete with 50 H. P. Motors. Several Motor generator sets from 200 KW down to 50 KW. One 48" Anti Friction conveyor belt complete, 454 ft. centers, 500 tons per hour capacity.

Several Hundred Steel Mine cars, 14 inch Timken wheels 30 in. high, 11' 6" long, 66" wide, 42" gauge.

GAVENDA BROTHERS

Canton, Ill.

NEED DUMP CARS?

IMMEDIATE DELIVERY

- 16. 24-yd. Koppel 24. 16-yd. Western
- 9. 20-yd. Koppel 11. 16-yd. Kilbourne & Jacobs
- 3. 20-yd. Western 62. 12-yd. Western

Illustrated specifications available

OTHER TYPES OF CARS TOO

Also Locomotives, Cranes, Shovels, Etc.

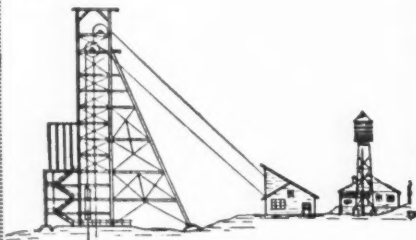
IRON & STEEL PRODUCTS, INC.

13484 S. Brainerd Ave. Chicago, Illinois

"ANYTHING containing IRON or STEEL"

STEEL HEADFRAMES

140' High, 4 Post W/Back Brace.
 2—9' PD Sheaves W/Brgs.
 Total weight approx. 200 Tons, Designed for 1 1/2" dia. Rope, 146 ton Breaking Strength—5' x 5' Skip and 5' 10" x 13' 6" Cage—Each 15 ton Capacity.



Pleasantville Constructors, Inc.
 Chelsea, New York

For Sale

LIMA 801

70' boom, 2 1/4 yd. Red Arch bucket. Factory rebuilt Waukesha-Hesselman motor also complete dragline at cost of \$9,000.00.

Now operating and subject to inspection
 for delivery about April 1st.

Reason for selling, require larger equipment to increase production. Will make reasonable terms to responsible purchaser or will trade for diesel powered dragline in good operating condition comparable to Monighan 5-W or larger.

THREE COUNTIES COAL CORPORATION
 AUGUSTA, ILLINOIS

Immediate Shipment from Stock

- 2—Electric BALDWIN GENERAL ELECTRIC LOCOMOTIVES 6 tons, 24" gauge. NEW
- 60—MINE CARS, 24" ga., 30 cubic feet, KILBOURNE & JACOBS

M. K. FRANK

Grand Central Palace New York, N. Y.

FOR SALE—CHEAP

- 2—100 K.W., D.C. Generators } Each Connected To
- 1—50 K.W., D.C. Generator } Ames Iron Works Engines
- 2—200 H.P. Sterling Boilers
- Cochrane Feed Water Heaters & Receivers
- 6—Jones Underfeed Stokers
- Sirocco #5 1/2 Fan, Series 30
- Clarage Fan #80 for Forced Draft

ACORN IRON & SUPPLY CO.
 DELAWARE AVE. & POPLAR ST., PHILA., PA.

FOR SALE

STEEL TIPPLE

Three track Roberts and Schaffer steel tipple with Marcus shaker screen and loading boom, 150 to 200 ton capacity.

Write FS-595, Coal Age
 330 W. 42nd Street, New York, N. Y.

Stripping Equipment

5 Large Draglines, 175' booms, capacity million yards per month.

For Rent, Sale, Contract or Development
 of property

FS-612, Coal Age
 520 No. Michigan Ave., Chicago, Ill.

SEARCHLIGHT SECTION

Desirable Electric Equipment—Prompt Shipment From Our Warehouse

750 KW TURBINE

Westinghouse Mixed Pressure 110# H.P.
2 to 4# LP 3600 RPM with gear box to 900
RPM, with accessories.
(Formerly connected to 750 KW 250 v. 900 RPM
Gen.)

SYN. MOTORS 3 ph. 60 cy.

HP	Make	V.	Speed
350	Al. Ch.	2200	600
225	Ideal	440	900
1-175	Westgh.	2200	600
2-75	Westgh.	2200	900
75	Westgh.	220	1800

M-G SETS 3 ph. 60 cy. (Syn.)

150 KW West. 550 v. DC 2200 v. AC—1200 RPM
150 KW Ridgeway 250 V.—2300 V. AC 900 RPM
1 PP
1-100 KW G.E. 250 v.—2300/4000 v.
1200 Rev. 70% P.F.
90 KW Al. Ch. 250 v. DC 2200 v. AC 900 RPM
75 KW West. 250 v. DC 2200 v. AC 900 RPM

LOCOMOTIVES

5 Ton Jeffrey Storage Battery 42 to 44" Ga. 2 BB
motors, Battery box on top.
6 Ton Whitcomb 250 v. 40" Ga.
1-4 1/2 Ton Westgh. 36" Ga. 250 v. with reel
10-Ton West. 250 v. 46/48" Ga.
10 Ton West. 250 v. 42" Ga. Mining Machines:

MINING MACHINES

2-CE 7 Sullivan DC standard 30 HP
12-G3 Goodman Std. Truck 220/3/60 6' bar.

SLIP RING & SQ. CG. MOTORS (3 ph. 60 cy.)

HP	Make	Speed	Wdg.	Type
700	G.E.	393	S.R.	MT 432
450	G.E.	257	S.R.	MT
400	West.	500	S.C.	CS
300	G.E.	600	S.R.	IM
200	Cr. Wh.	440	S.R.	28
200	Al. Ch.	600	S.C.	
125	Al. Ch.	435	S.R.	
125	Burke	1200	S.C.	
100	F.M.	600	S.C.	BB
100	Lincoln	1200	S.C.	
75	West.	870	S.R.	CW752C
75	West.	575	S.R.	CW868A
75	G.E.	865	S.C.	KT

AIR COMPRESSORS

846 cu. ft. 65# Inq. Rand 2 stage ERI
550 cu. ft. 100# Bury 2 stage
355 cu. ft. 100# Pres. Laidlow Dunn Gordon
160 cu. ft. Chic. Pneu. 100#
Sullivan Port. Mine Comp. 10 x 10—42" Ga.

CENTRIFUGAL PUMPS (Direct Motor Driven)

700 GPM 277' DeLaval—75 HP Westgh. Syn.
1-260 GPM 277' Manistee—30 HP Westgh.
2-800 GPM 95' Head Union Steam Pumps.
600 GPM 73' head. Union Steam 25 P GE KET
1200 RPM A.C.

ENGINE GENERATOR SETS

100 KW 250 v. DC Westgh.—Skinner Engine

HOIST

75 HP Ottumwas sgl. fr. drum 36" Dia. 30" wide 8"
flanges geared 75 HP CI Westgh. slip ring motor
with rev. drum control
75 HP Lidgerwood sgl. fr. drum
50 HP Diamond 2 drums same Shaft
30 HP Clyde sgl. drum AC Motor
25 HP Thomas sgl. drum AC Motor
15 HP Lidgerwood sgl. dr. AC Motor

DC MOTORS (230 Volts)

HP	Make	Speed	Type
30	West.	600	S-9
20	West.	900	SK-100L
25	West.	600	SK 130
20	West.	1100	SK 90
20	West.	750	SK 110L
15	West.	1200	SK
7 1/2 (24)	G.E.	825	CVC

MOORHEAD-REITMEYER CO., INC. PITTSBURGH, PENNSYLVANIA

Immediate Shipment
Low Prices

NEW RUBBER

Guaranteed
High Grade

CONVEYOR and TRANSMISSION BELTING

CONVEYOR BELTING ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers
48"	5	1/2"	1/16"
42"	5	1/2"	1/16"
36"	6	1/2"	1/16"
30"	6	1/2"	1/16"
30"	5	1/2"	1/16"
24"	5	1/2"	1/32"
24"	4	1/2"	1/32"
20"	5	1/2"	1/32"
20"	4	1/2"	1/32"
18"	4	1/2"	1/32"
16"	4	1/2"	1/32"
14"	4	1/16"	1/32"
12"	4	1/16"	1/32"

TRANSMISSION BELTING HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

ELEVATOR BELTING HEAVY DUTY RUBBER COVERED

Width	Ply	Top-Bottom	Covers
12"	6	1/16"	1/16"
14"	6	1/16"	1/16"
16"	6	1/16"	1/16"
18"	6	1/16"	1/16"

ENDLESS "V" BELTS

"A" — WIDTH — All Sizes
"B" — WIDTH — All Sizes
"C" — WIDTH — All Sizes
"D" — WIDTH — All Sizes
"E" — WIDTH — All Sizes
Sold in Matched Sets

RUBBER HOSE

ALL SIZES FOR
AIR — WATER —
STEAM — SUCTION —
FIRE — WELDING
ETC.

Inquire For Prices —: Mention Size and Lengths

CARLYLE RUBBER CO., Inc.
66 PARK PLACE
New York, N. Y.

IRON and STEEL PIPE

New and Used
Large stocks, all sizes
attractive prices

L. B. FOSTER COMPANY, Inc.
P. O. Box 1647
Pittsburgh, Pa.

New and Guaranteed Tested Reconditioned STEEL PIPE AND BOILER TUBES

In Light Weight, Standard or Heavy
Jos. Greenspon's Son Pipe Corp.
NAT'L STOCK YDS (ST CLAIR CO) ILL.

PIPE—MACHINERY—GAS ENGINES AIR COMPRESSORS—DIESELS—PUMPS

Some Steam Engines and Boilers available only slightly above the metal price

BRADFORD SUPPLY COMPANY
WAYNE, WOOD COUNTY, OHIO
Near Toledo

FOR SALE!

USED PIPE

Low Prices — Quality Pipe
All Sizes—Reconditioned

THE INTERSTATE PIPE & SUPPLY CO.
MARIETTA, OHIO

High Grade Maintenance Machine Tools

Lathes, Shapers, Milling Machines, Hy-
draulic Presses, Hack saws, every type
of tool for the maintenance shop. Write
for catalogue.

Cincinnati Machinery & Supply Co.
217 E. Second St.
Cincinnati, Ohio

2 VULCAN MINE HOISTS

2 Yrs. old—9'0" P.D. Single Drum 6'0" and 7'8" Face—
350 HP and 500 HP—400 FPM and 600 FPM

Also 5 Sheaves 9'0" P.D. all grooved for 1 3/4" dia. Cable

PLEASANTVILLE CONSTRUCTORS, INC.
Chelsea, N. Y.

SUB STATIONS

1-300 KW West. Syn. MG Set, 600 v. DC.
1-200 KW West. 250 v. otherwise same as
above.
1-200 KW West. Rotary Converter, 275 v.
DC, 2300 v. AC.
1-150 KW West. 275 v. DC MG Set.
1-100 KW West. same as above.
1-35 KW, 125 v. Battery Charging Set.

MINE LOCOMOTIVES

1-13 ton G. E. with HM 829 250 v. ball
bearing motors.
1-10 ton Jeffrey, MH 110 250 v. motors.
1-10 ton, same as above with 500 v. motors.
2-8 ton West. Bar Steel Frame, 906 motors.
3-6 ton Jeffrey, MH 88 250 or 500 v. motors.

CUTTING MACHINES

2-35BB Jeffrey, 250 v. permissible.
1-35BB Jeffrey, 500 v. permissible.
1-35BB Jeffrey, 250 v.
1-35BB Jeffrey, AC Shortwall.
2-35B Jeffrey, 250 v. DC.
1-35B Jeffrey, Low-vein, 250 v.
1-212G3 Goodman Low-vein AC.
1-12G3 Goodman AC Shortwall.
1-12AB Goodman, 210 v. DC.
1-29B Jeffrey Arcwall DC.
1-29C Jeffrey Arcwall, 250 v. DC.

HOISTS

1-200 HP Single Drum Slope Hoist, 9000' of
rope.
1-600 HP Shaft Hoist.

Tippins Machinery Company

3530 Forbes St. Pittsburgh, Penna.

MINING EQUIPMENT

For Sale By Owner

Account Abandonment

3—Loading Booms: Lengths 31'6 and 32'
Drop 17' to 23'
1—English Iron Works Electric Hoist
30" Drum
1—English Iron Works Hoist 16" Drum
4—Sullivan Type C.E. 7 Shortwall Min-
ing Machines
3—Sullivan Type C.E. 9 Longwall Mining
Machine
1—Goodman Type 12 Shortwall Mining
Machine
1—Shaker Screen for 4 track tippie
Electric Motors 7 1/2 to 60 H.P.
Pumps Plunger and centrifugal.

Various other types of equipment.
List and specifications on request.

Must move quick.

R. A. Young & Son Coal Company

301 South Tenth Street
FORT SMITH, ARKANSAS

An asterisk preceding manufacturer's name indicates detailed information may be found in the 1941 *COAL MINING CATALOGS*.
Where † appears after a company's name the advertisement does not appear in this issue, but was in preceding issues.

<p> Ahlberg Bearing Co. 157 Air Reduction Sales Co. 31 *Allis-Chalmers Mfg. Co. 30 American Brattice Cloth Corp. 121 *American Cable Div. of American Chain & Cable Co. Third Cover American Car & Foundry Co. 46, 47 American Cyanamid & Chemical Corp. 16, 17 *American Mine Dosa Co. 120 American Optical Co. 48 *American Pulverizer Co. 139 *American Steel & Wire Co. 38, 39 Anaconda Wire & Cable Co. 19 Armstrong-Bray & Co. 155 Atlas Powder Co. 8 Bemis Bros. Bag Co. † *Bethlehem Steel Co. 50, 51 Bituminous Casualty Corp. 116 *Bowditch Co. 138 Broderick & Bascom Rope Co. 56 *Brown-Fayro Co. 104 Calcium Chloride Association 157 Carbozite Corp. † Cardox Corp. 6 *Carnegie-Illinois Steel Corp. † *Central Mine Equipment Co. 103 *Centrifugal & Mechanical Industries, Inc. 144 Chicago Perforating Co. 155 *Chicago Pneumatic Tool Co. 150, 151 *Cincinnati Electrical Tool Co. † *Cincinnati Mine Machinery Co. 96 Cities Service Oil Co. 153 Clarkson Mfg. Co. 105 Coal Age † Coal Mining Catalogs. 148 Cofing Hoist Co. 130 Columbia Steel Co. † *Deister Concentrator Co. 115 *Deister Machine Co. 124 DeLaval Steam Turbine Co. 120 *Deming Co. 149 *Differential Steel Car Co. 152 *Duff-Norton Mfg. Co. † *du Pont de Nemours & Co., Inc., E. I. (Fabrikoid Div.) 136, 137 *du Pont de Nemours & Co., Inc., E. I. (Explosives Div.) 136, 137 *du Pont de Nemours & Co., Inc., E. I. (Grasselli Chemicals Dept.) 136, 137 Edison Storage Battery Div. of Thos. A. Edison, Inc. † *Electric Storage Battery Co. 80, 81 Ensinger-Bickford Co. 60 *Enterprise Wheel & Car Corp. † </p>	<p> Fairbanks Co., The. 154 *Fairmont Machinery Co. † Flexible Steel Lacing Co. † *Flocker & Co., John. 111 Flory Manufacturing Co. 156 Gates Rubber Co. 140 *General Electric Co. 43, 49 General Electric Co. (Appliance and Merchandising Dept.) † *Gibraltar Equipment & Mfg. Corp. 127 Goodman Mfg. Co. 40, 41 Goodrich Co., B. F. 1 Goodyear Tire & Rubber Co. † Gould Storage Battery Corp. 146 *Goynne Steam Pump Co. 155 Gulf Oil Corporation 107 Gulf Refining Co. 107 *Hazard Insulated Wire Works 37 *Hazard Wire Rope Div. American Chain & Cable Corp. † Hendrick Mfg. Co. 156 Hercules Powder Co. † Heyl & Patterson, Inc. † Holmes & Bros., Robt. 131 Hulburt Oil & Grease Co. 2, 3 I. T. E. 18 *Jeffrey Mfg. Co. † Insert between pages 20, 25 Johnson-March Corp., The. † *Jones & Laughlin Steel Corp. † *Joy Mfg. Co. 58, 59 *Kanawha Mfg. Co. 52 King Powder Co. 145 Koehler Mfg. Co. 135 *Labour Co., Inc. † *Laughlin Co., Thomas. 122 *Leschen & Sons Rope Co., A. 108 Lima Locomotive Works, Inc. † Lincoln Engineering Co. 155 Link-Belt Co. Fourth Cover Macmillan Petroleum Corp. † *Macwhitty Co. † Marlo Co. 129 McGraw-Hill Book Co. 154, 158 *McLanahan & Stone Corp. 147 </p>	<p> McNally-Pittsburgh Mfg. Corp. † Insert between pages 32, 37 Merrick Scale Mfg. Co. 156 *Metal & Thermit Corp. 126 Mine Safety Appliances Co. 141 *Mining Safety Device Co. 57 Morrow Mfg. Co. 164 Mosebach Electric & Supply Co. 124 *Mott Core Drilling Co. 116 *Myers-Whaley Co. 25 *National Malleable & Steel Castings Co. 143 *Norma-Hoffman Bearings Corp. 42 Ohio Brass Co. 14, 15 Ohio Oil Co. † *Osmose Wood Preserving Co. of America, Inc. 116 *Pennsylvania Crusher Co. 131 Philco Storage Battery Div. 4 *Pittsburgh Knife & Forge Co. 130 Pomona Pump Co. 53 Portable Lamp & Equipment Co. † Post-Glover Electric Co. 129 *Pressed Steel Car Co., Inc. 128 Provident Life & Accident Insurance Co. 125 Roberts & Schaefer Co. 159 *Robins Conveying Belt Co. † *Rockbestos Products Corp. 100 *Roebbling's Sons Co., John A. 45, 99 Rollway Bearing Co., Inc. † *Ruberoide Co. † *Sanford-Day Iron Works Co. 13 Scully Steel Products Co. † Searchlight Section. 159, 160, 161, 162, 163 Sinclair Refining Co. 32 S K F Industries, Inc. 142 Socony-Vacuum Oil Co. † Standard Oil of Indiana. 119 Stearns-Magnetic Mfg. Co. 106 Streeter-Amet Co. 123 *Sullivan Machinery Co. 26, 27, 28, 29 Sun Oil Co. Second Cover Tamping Bag Co. 159 Templeton, Kenly & Co. 158 Texas Co. † Insert between pages 8, 13 </p>	<p> Tide Water Associated Oil Co. † Timber Engineering Co. 117 *Timken Roller Bearing Co. 95 U. S. Rubber Corp. † *U. S. Steel Corp. Subsidiaries. 38, 39 U. S. Treasury. † Walter Motor Truck Co. 44 Westinghouse Air Brake Co. Ind. Div. 54, 55 *Westinghouse Electric & Mfg. Co. † West Virginia Rail Co. 115 *Wickwire Spencer Steel Co. 20 Wilmot Engineering Co. 131 *Wycoff & Son Co., A. 156 PROFESSIONAL SERVICES 132 SEARCHLIGHT SECTION (Classified Advertising) BUSINESS OPPORTUNITIES 159 CORE DRILLING 159 EMPLOYMENT 159 PROPERTIES FOR SALE 159 USED AND SURPLUS EQUIPMENT 159-163 Acorn Iron & Supply Co. 162 Bradford Supply Co., Inc. 163 Carlyle Rubber Co., Inc. 163 Cincinnati Machinery & Supply Co. 160 Coal Mine Equipment Sales Co. 160 Crescent Mining Co. 160 Dulien Steel Products, Inc. 160 Duquesne Electric Mfg. Co. 161 Electric Equipment Co. 161 Electric Service Co., Inc. 162 Erman Howell & Co., Inc. 162 Foster Co. L. B. 161-163 Frank, M. K. 161-162 Gavenda Brothers 162 Greensburg Machine Co. 162 Green'son's Son Pipe Corp., Jos. 163 Guyan Machinery Co. 163 Hair Equipment Co. 163 Coal Mine Equipment Sales Co. 160 Crescent Mining Co. 160 Dulien Steel Products, Inc. 160 Duquesne Electric Mfg. Co. 161 Electric Equipment Co. 161 Electric Service Co., Inc. 162 Erman Howell & Co., Inc. 162 Foster Co. L. B. 161-163 Frank, M. K. 161-162 Gavenda Brothers 162 Greensburg Machine Co. 162 Green'son's Son Pipe Corp., Jos. 163 Guyan Machinery Co. 163 Hair Equipment Co. 163 Coal Mine Equipment Sales Co. 160 Crescent Mining Co. 160 Dulien Steel Products, Inc. 160 Duquesne Electric Mfg. Co. 161 Electric Equipment Co. 161 Electric Service Co., Inc. 162 Erman Howell & Co., Inc. 162 Foster Co. L. B. 161-163 Frank, M. K. 161-162 Gavenda Brothers 162 Greensburg Machine Co. 162 Green'son's Son Pipe Corp., Jos. 163 Guyan Machinery Co. 163 Hair Equipment Co. 163 Coal Mine Equipment Sales Co. 160 Crescent Mining Co. 160 Dulien Steel Products, Inc. 160 Duquesne Electric Mfg. Co. 161 Electric Equipment Co. 161 Electric Service Co., Inc. 162 Erman Howell & Co., Inc. 162 Foster Co. L. B. 161-163 Frank, M. K. 161-162 Gavenda Brothers 162 Greensburg Machine Co. 162 Green'son's Son Pipe Corp., Jos. 163 Guyan Machinery Co. 163 Hair Equipment Co. 163 Coal Mine Equipment Sales Co. 160 Crescent Mining Co. 160 Dulien Steel Products, Inc. 160 Duquesne Electric Mfg. Co. 161 Electric Equipment Co. 161 Electric Service Co., Inc. 162 Erman Howell & Co., Inc. 162 Foster Co. L. B. 161-163 Frank, M. K. 161-162 Gavenda Brothers 162 Greensburg Machine Co. 162 Green'son's Son Pipe Corp., Jos. 163 Guyan Machinery Co. 163 Hair Equipment Co. 163 Coal Mine Equipment Sales Co. 160 Crescent Mining Co. 160 Dulien Steel Products, Inc. 160 Duquesne Electric Mfg. Co. 161 Electric Equipment Co. 161 Electric Service Co., Inc. 162 Erman Howell & Co., Inc. 162 Foster Co. L. B. 161-163 Frank, M. K. 161-162 Gavenda Brothers 162 Greensburg Machine Co. 162 Green'son's Son Pipe Corp., Jos. 163 Guyan Machinery Co. 163 Hair Equipment Co. </p>
---	---	---	--

MANUFACTURING CO. WELLSTON, OHIO
DESIGNERS AND BUILDERS OF COAL HANDLING EQUIPMENT FOR OVER 75 YEARS

Sand and Gravel Screening and Washing Machinery

Flanged Lip Screen Plates



AID DEFENSE

REDUCE ACCIDENTS

CONSERVE STEEL

AMERICAN CABLE

TRU-LAY

Preformed

IS HELPING

This is no time to have machine shutdowns. By lasting so much longer **TRU-LAY PREFORMED** reduces shutdown frequency and steadies production.

This is no time to have workmen laid up with blood-poisoned hands. Some operators have drastically reduced accidents by adopting American Cable **TRU-LAY PREFORMED**—the *safer* rope.

This is no time to waste steel through the use of short-lived equipment. By lasting longer and working better **TRU-LAY PREFORMED** conserves steel for other essential machines.

American Cable engineers will gladly give you the benefit of their experience in helping you make your wire ropes last longer. All American Cable ropes made of Improved Plow Steel are identified by the Emerald Strand.

AMERICAN CABLE DIVISION • WILKES-BARRE • PENNSYLVANIA

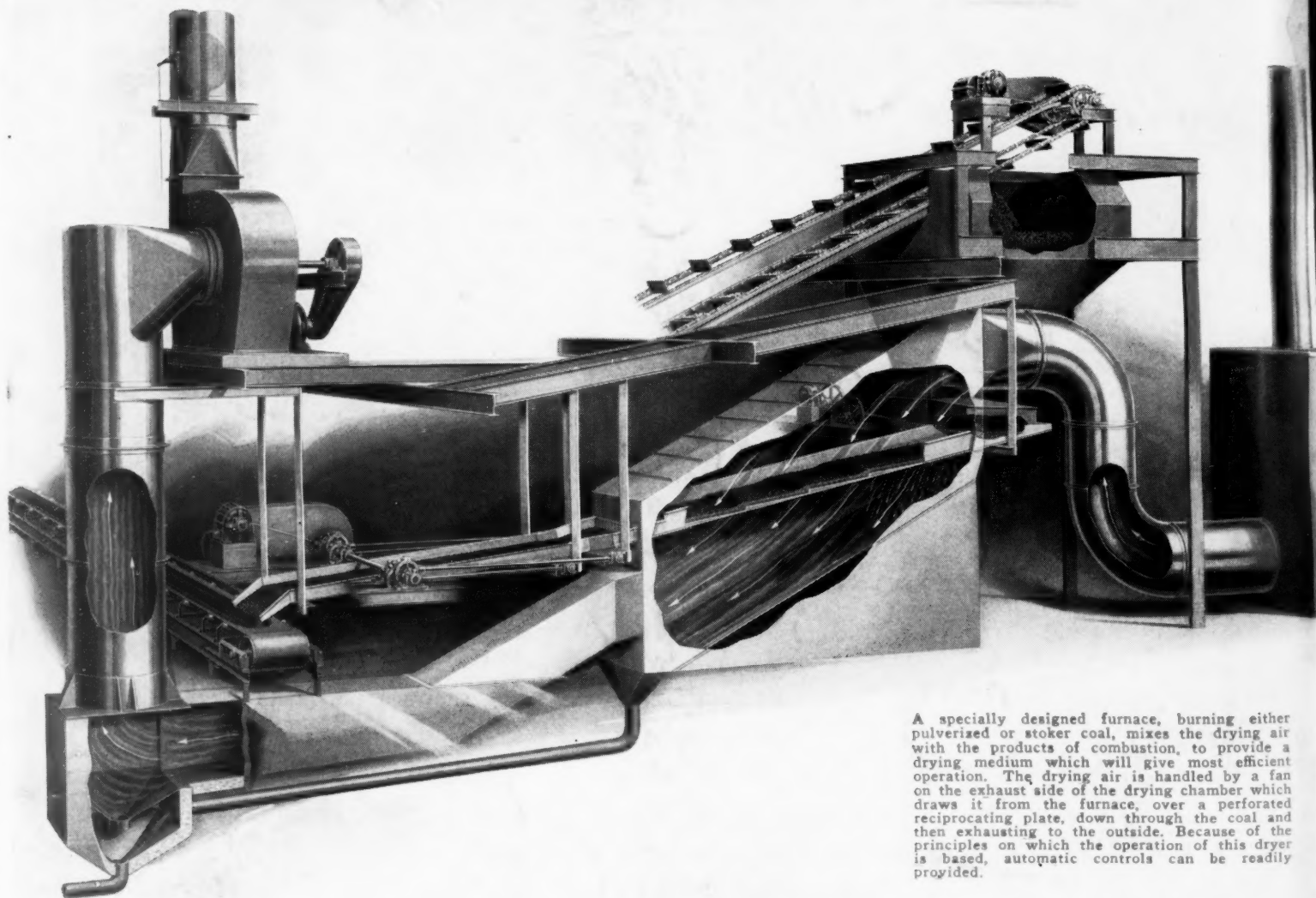
District Offices: Atlanta, Chicago, Detroit, Denver, Los Angeles, New York, Philadelphia, Pittsburgh, Houston, San Francisco

AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT • CONNECTICUT



ESSENTIAL PRODUCTS . . . AMERICAN CABLE Wire Rope, TRU-STOP Emergency Brakes, TRU-LAY Control Cables, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Iron Castings, CAMPBELL Cutting Machines, FORD Hoists and Trolleys, HAZARD Wire Rope, Yacht Rigging, Aircraft Control Cables, MANLEY Auto Service Equipment, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Electric Steel Castings, WRIGHT Hoists, Cranes, Presses . . . *In Business for Your Safety*

LINK-BELT Announces *The New* **"SS" DRYER**



A specially designed furnace, burning either pulverized or stoker coal, mixes the drying air with the products of combustion, to provide a drying medium which will give most efficient operation. The drying air is handled by a fan on the exhaust side of the drying chamber which draws it from the furnace, over a perforated reciprocating plate, down through the coal and then exhausting to the outside. Because of the principles on which the operation of this dryer is based, automatic controls can be readily provided.

A Modern, Low-Cost, Effective Dryer for Removing Surface Moisture from Sized Coal

Here it is—A new, highly successful, safe, sure, low-cost method of drying coal, 10-mesh and up. It will give you everything an operator could ask for . . . high capacity . . . thorough, uniform drying . . . low power consumption . . . minimum maintenance.

Coal is passed through the drying chamber in a thin bed, requiring a short retention period, with low temperatures and low static resistance

to the drying air. The screen plates which are oscillated, agitate the coal as it passes through the drying chamber, thus completely exposing its entire surface to the heat. This results in—

- Low temperature requirements for inlet gases and low static pressure at the exhaust fan.
- Thorough, uniform drying and a relatively cool discharged product.



LINK-BELT COMPANY

Chicago, Philadelphia, Pittsburgh, Wilkes-Barre, Huntington, W. Va., Denver, Kansas City, Mo., Cleveland, Indianapolis, Detroit, St. Louis, Seattle, Toronto, Vancouver.



ANOTHER WAR PRODUCTION NUMBER

MAY 1942

Coal Age

McGraw-Hill Publishing Company, Inc. • THIRTY-FIVE CENTS PER COPY

MUST COAL COPY

Britain's War Production Errors

•

VOCATIONAL SCHOOL

Enrolls 1,700 Indiana Miners

•

MINE LOCOMOTIVES

Adapted to Today's Necessities

•

ROCK-DUST FIGHTING

Overcomes Elkhorn Seam Mine Fire

•

HIGHEST PRIORITY

Given Mine Equipment Suppliers

•

LIGHTNING AND SURGES

Made Harmless to Mine Machinery

•

PILLARS RECOVERED

With Duckbills and Shaker Conveyors

•

Complete Table of Contents, P. 5



Loading at tail end of face conveyor, Black Coal & Coke Co., Tennessee

7 Extra Cars .. No Extra Power



SUN MINE LUBRICANTS

Cut Power Drag 22% .. Lubricating Costs 25%

In one large mine, production demands called for increased hauling capacity and machine efficiency. Studies and tests were made. Sun Mine Lubricants were adopted, with the following results: 22% larger loads hauled with the same draw bar pull, making it possible to add 7 cars to every haul ... one man's time and 25% in costs saved on lubrication and maintenance ... operating efficiency of mining machines greatly improved.

That's another typical report of one of those Doctors of Industry, a Sun Oil Engineer ... an example of how Sun Mine Lubricants and Sun Engineering Service are working as a team to help mine superintendents obtain

maximum production from available equipment. If inefficient lubrication is preventing your mine from maintaining a high production quota, don't delay ... call in one of Sun's Doctors of Industry. His services are yours; the products he offers are the same which have helped other mines to reduce power drag ... step up lubricating efficiency ... cut maintenance costs ... and obtain peak production.

For proof of what skilled engineering service has accomplished, send for your copy of the new booklet "Helping Industry Help America." Write SUN OIL COMPANY, Philadelphia.



SUN MINE LUBRICANTS

include:

- SUN Pressure Grease
- SUN Compressor Oils
- SUN Journal Oils
- SUN Mine Car Lubricants
- SUN Ball & Roller Bearing Greases

SUNOCO

SUN PETROLEUM PRODUCTS

HELPING INDUSTRY HELP AMERICA



Onion-seed pipe lines broke out at the elbows

A typical example of B. F. Goodrich improvement in rubber

ONIONS are \$1 a pound in Europe but rubber is helping see to it there will be no shortage here.

Onion seeds are hard yet sensitive little things, easily hurt. Those thousands you see jumping around in the picture have just traveled a long way through pipes in a seed-cleaning plant. But—driven at high speed by compressed air—the hard seeds were quickly wearing through iron pipe elbows.

A big seed company, anxious to save this expense and believing the quality of seed would be improved with gentler handling, wondered if rubber

could be used in some way. They called in B. F. Goodrich engineers.

Rubber-lined pipe, hose, chutes, had already been used for carrying rock, mud, acids and dozens of other things. This was the first time for onion seeds, but B. F. Goodrich engineers developed long curving pipe elbows made like suction hose, using a rubber compound that sharp, flying seeds would not cut, yet so soft it could protect them from bruising. The rubber elbows were installed at the bends and curves in every seed-carrying pipe in the plant.

Steel elbows used to be cut through in one season; the rubber has lasted

three and is still good. More important, it was found that the seed is better—the soft rubber cushions its rapid travel around angles and so prevents harmful bruising. Here is one of many cases where B. F. Goodrich research, which has recently developed a score of vital war products, had worked before the war, too, to help improve America's food supply and prevent waste and needless cost. *The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

B. F. Goodrich
FIRST IN RUBBER

IN ALL THE WORLD N



HULBURT
QUALITY GREASE

THE ONLY GREASE MADE EXCLU SI

NO QUALITY LIKE THIS



SIVELY FOR COAL MINE EQUIPMENT

NO EXPENSIVE TOW-IN'S!



PHILCO XL BATTERIES

with 10% Greater Capacity

give you vital Reserve Power for Emergencies!

Joy Shuttle Cars or mine locomotives, powered with Philco XL Storage Batteries, have a 10% *reserve* of power—a reserve that brings the car in safely when an ordinary battery would leave it stranded. Plate for plate, these husky Philco Batteries give you 10% greater capacity!

Philco's extra capacity... sustained high voltage... long productive life is the result



of 50 years of practical battery experience and development work out of which has come such advances as Philco "K" Process plates... Philco Triple Insulation... Philco Construction.

And now, with production facilities *tripled* in our new Trenton plant, you can get Philco Batteries for Joy Shuttle Cars in 7 days after receipt of order! Specify Philco!



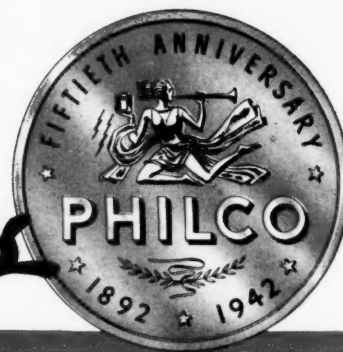
NEW CATALOG

Write today for the new Philco Mine Locomotive and Shuttle Car Battery catalog. Philco Storage Battery Division, 481 Calhoun Street, Trenton, N. J.

**PHILCO STORAGE BATTERIES... DEPENDABLE MOTIVE POWER
FOR YOUR JOY SHUTTLE CARS AND MINE LOCOMOTIVES**

PHILCO

Storage Batteries



Last
recov
often
cover
oper
with
plann
care
jor o
that
insta
Elec
gone
since
put
thro
mea
spee
ern
ter
the
van
elec
phy
all
arti
spe
exp
ing
we
pay
us

COA
Coll
is pu
ten d
tions
to th
Stree
Sut
Mexi
year
Brita
year
tries
copi
matt
Alba
Print
Hill